VOLUME LVI NUMBER TWO

THE NATIONAL GEOGRAPHIC MAGAZINE

AUGUST, 1929

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TO carry out the purposes for which it was founded forty-one years ago the National Geographic Society publishes this Magazine monthly. All receipts are invested in the Magazine itself or expended directly to promote geographic knowledge.

ARTICLES and photographs are desired. For material which the Magazine can use, generous remuneration is made. Contributions should be accompanied by addressed return envelope and postage.

IMMEDIATELY after the terrific eruption of the world's largest crater, Mt. Katmai, in Alaska, a National Geographic Society expedition was sent to make observations of this remarkable phenomenon. Four expeditions have followed and the extraordinary scientific data resulting given to the world. In this vicinity an eighth wonder of the world was discovered and explored—"The Valley of Ten Thousand Smokes," a vast area of steaming, spouting fissures. As a result of The Society's discoveries this area has been created a National Monument by proclamation of the President of the United States.

AT an expense of over $50,000 The Society sent a notable series of expeditions into Peru to investigate the traces of the Inca race. Their discoveries form a large share of our knowledge of a civilization waning when Pizarro first set foot in Peru.

THE Society also had the honor of subscribing a substantial sum to the expedition of Admiral Peary, who discovered the North Pole, and has contributed $25,000 to Commander Byrd's Antarctic Expedition.

NOT long ago The Society granted $25,000, and in addition $75,000 was given by individual members to the Government when the congressional appropriation for the purpose was insufficient, and the finest of the giant sequoia trees of California were thereby saved for the American people.

THE Society has conducted extensive excavations at Pueblo Bonito, New Mexico, where prehistoric peoples lived in vast communal dwellings before the days of Columbus; it is sponsoring an ornithological survey of Venezuela, and is maintaining an important photographic and botanical expedition in Yunnan Province, China.

TO further the study of solar radiation in relation to long range weather forecastings, The Society has appropriated $65,000 to enable the Smithsonian Institution to establish a station for five years on Mt. Brukkaros, in Southwest Africa.

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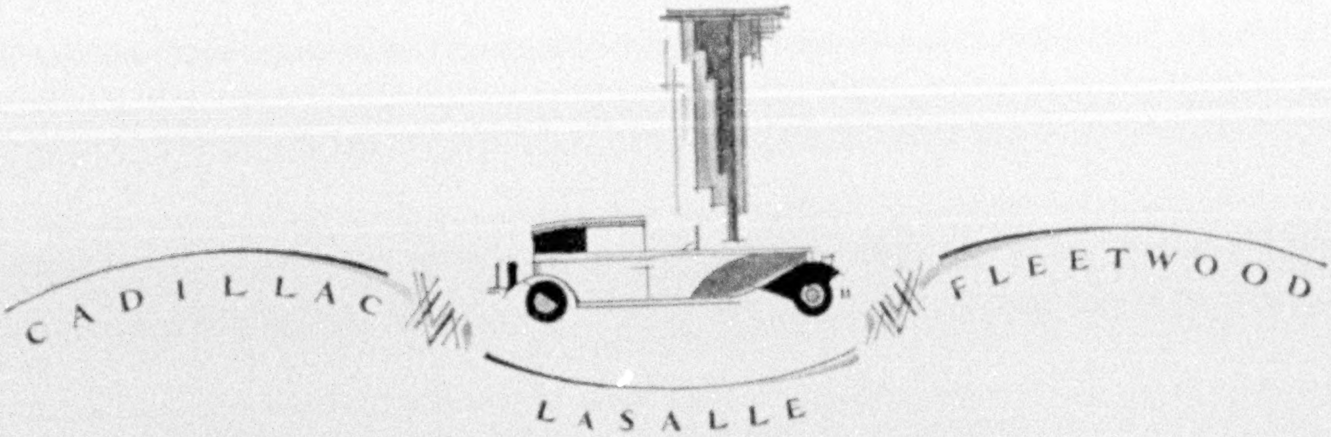
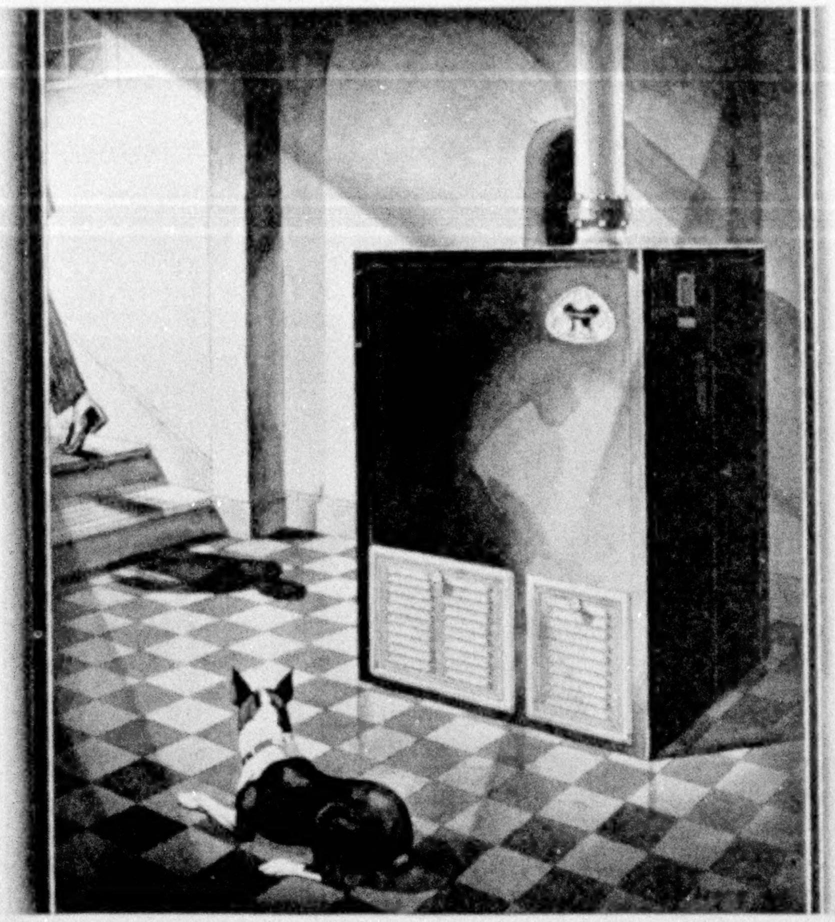


No indeed all cars are *not* alike

PUBLICITY and propaganda would seem to make all motor cars pretty much alike in the service they render. Of course a moment's serious thought immediately disposes of any such idea. It is perfectly obvious that varying types and prices must mean varying performance. In their ability to go somewhere and safely return, all motor cars render a very valuable service. Above and beyond that, however, or added to it, they can render an even greater service—which is to go somewhere and return with the *greatest possible measure of comfort to the traveler.* This service various motor cars render in varying degrees. There are two motor cars which are conceded to render it in the highest possible degree. As long as the owner of other cars does not know of this greater degree of ease which these two cars provide—as long as he does not realize that the moments and hours which they give are richer, fuller, more refreshing moments and hours—he should, and probably will, remain content. Those who realize, however, that motor car values *are* relative—who wish every moment of motoring to be a golden moment of ease, and efficiency, and refreshment—know perfectly well where to find that which they seek.

CADILLAC MOTOR CAR CO., DIVISION OF GENERAL MOTORS



Light it

then let your pup be furnace man

MANY a seller of automatic heating equipment will point with pride to the service organization he maintains so that he can promise you that the device he is recommending will be kept in operation. Keep firmly in mind, however, that what you want is *performance*—not servicing. The less servicing you will require, the better will you be satisfied.

Before buying any automatic heating plant for any kind of fuel, investigate Bryant Gas Heating. Get the testimony of Bryant owners. Find out directly from them how unimportant "service" really is if the equipment is right in the beginning. Let them explain a Bryant's utter noiselessness, absolute cleanliness, its inability to mar a radio program. Let owners tell you of ten, twelve and fifteen winters of operation without a single repair. And remember—Bryant Gas Heating has behind it a TWENTY-YEAR record of satisfaction to its owners—a guarantee far more significant than the most sweeping of written or printed promises.

For the complete details of this heating equipment which you can light and forget, just 'phone your local Bryant office or write to us at Cleveland.

BRYANT GAS HEATING

THE BRYANT HEATER & MFG. COMPANY
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—lets your Pup be your Furnace Man

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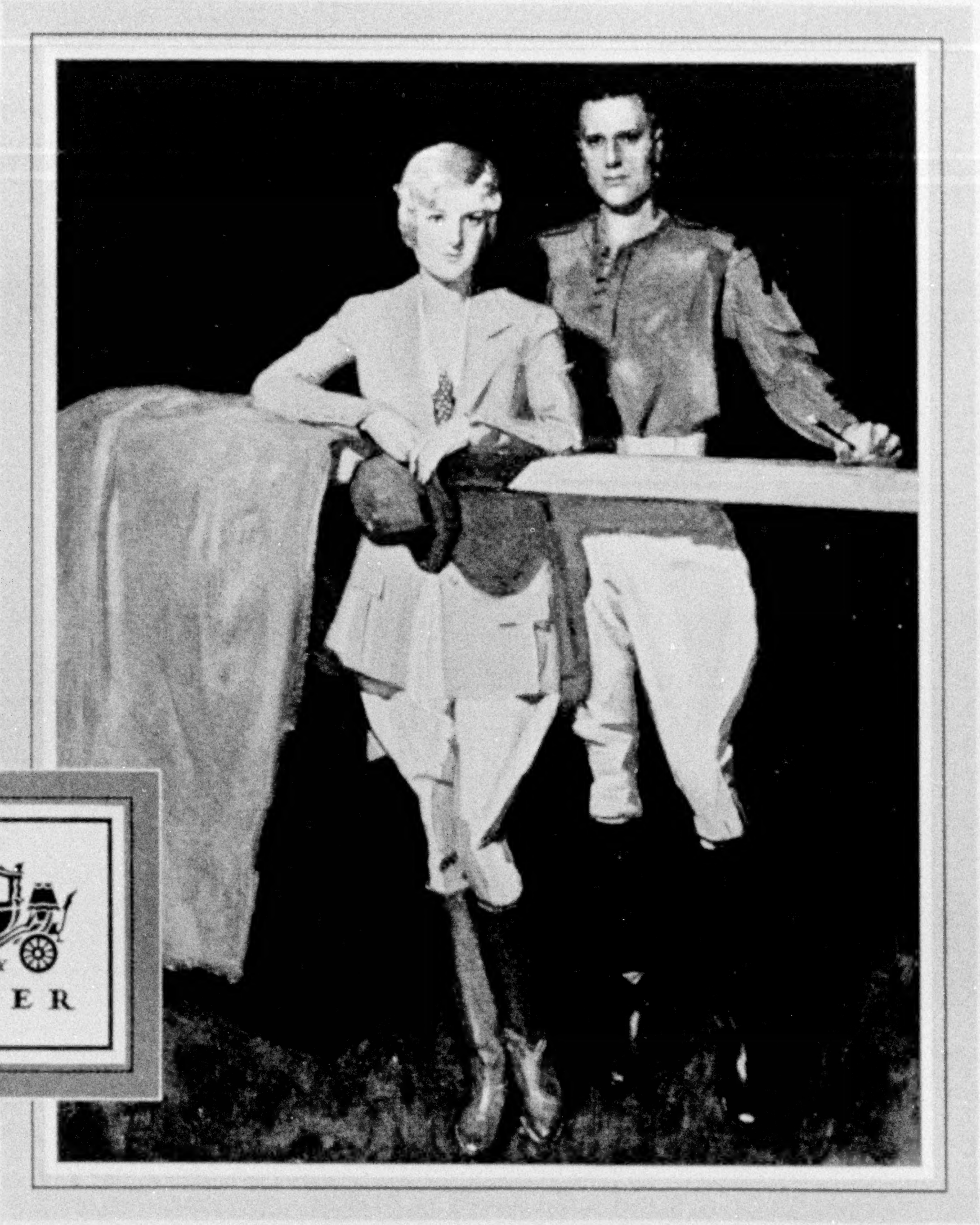
No space needed for fuel or refuse storage. No tools. No manual or mechanical labor. A single match your winter's kindling. Furnace tending by the calendar—not by the clock. Absolutely even warmth at the temperature you select for day and night.

No soot. No smell. No drippings. No vapors. No noise. No moving parts to wear out, become noisy or require frequent servicing. No delicate adjustments. No radio interference.

Lightens housework; postpones redecorating and reupholstering by years. The boiler is a handsome piece of metal furniture which will harmonize unobtrusively with its surroundings in a basement recreation or play room, billiard room or movie studio.



BODY
by
FISHER

Even after years of use a Fisher Body is a source of pride ✓ ✓ The owner of a Fisher Body car is assured of his automobile looking fresh and new, long after the ordinary body would have become a source of impatient dissatisfaction. Common experience proves that Fisher Bodies actually outlast the chassis—which, of course, means a period of many years. ℂ Never in its long history has Fisher been stopped by price. Refusing to be influenced by an incessant and insidious process of cheapening in body manufacturing generally, Fisher has been able to apply to bodies in the lowest price field, the same basic construction used in bodies for the most expensive cars. ℂ Fisher alone can give such body value because Fisher has the largest assured market and the greatest public acceptance in the world.

CADILLAC ✓ LASALLE ✓ BUICK ✓ VIKING ✓ OAKLAND ✓ MARQUETTE
OLDSMOBILE ✓ PONTIAC ✓ CHEVROLET
GENERAL MOTORS

This One Unique Floor Machine

Scrubs

Here's the way to clean tile, cement or marble floors. Fast. Efficient. No back-breaking drudgery. No splashing

Scrapes

Takes off the old dingy shellac or varnish and sandpapers the wood to velvet smoothness.

Polishes

Waxes the floor and then polishes it. Result is far superior to handwork and you use much less wax.

COSTS but a FRACTION of what a contractor would charge for doing over your FLOORS . . . so amazingly SIMPLE you operate it YOURSELF

The electrical way of doing over floors. Plug into an electric light socket like a vacuum cleaner. You don't even push or pull — you merely guide the machine.

YOU'D be surprised how beautiful your floors *could* be.

They may look dingy and disreputable now, but how they'll gleam and glisten when done over the *electrical* way.

Instead of pulling rugs over the ugly worn spots, as you may be doing now, you'll be so proud of the lovely finish that you'll hate to cover up a single inch.

Can't you picture how much better your furniture will look . . . and your draperies . . . and rugs?

Can't you just hear your friends asking whether you've had a *new* floor put down?

How amazed they'll be when you tell them that you actually did over your old floors *yourself*... that the marvelous improvement was entirely due to *your own* efforts!

Yet that's just what you *can* tell them. The Ponsell Electric Floor machine enables you to scrape, sandpaper, wax and polish your old floors without bringing a single workman into your home.

Too good to be true? Not a bit of it. That's only *one* of the advantages. In addition, you save money because the machine costs but a fraction of what a contractor would charge you to do over your floors.

Then, too, the machine refinishes your floors in such a way that they are no trouble at all to keep looking beautiful all the time.

It's astonishing how quickly and easily floors can be done over with the aid of electricity. The *head*-work YOU do; the *hard* work you leave to the machine.

You plug into a socket just as you would with a vacuum cleaner. In a few minutes you are running the Ponsell like an expert and your floors are on the way to a vast improvement.

Good-by, Drudgery!

When floors are done over by ordinary methods they have to be refinished every few years; and it is no easy task, as you well know, to keep them looking presentable from day to day.

But when you do them over the Electric way, you never have to refinish them again and, what's more, the machine takes care of them for you forever after.

A few minutes' polishing each week, an occasional rewaxing (operations which the Ponsell makes absurdly easy), and your floors become the constant envy and admiration of your friends.

The machine brings you other important benefits — more than there is room to describe here. So — while the subject is fresh in your mind — send in the coupon for a complete description.

TEAR OFF . . . FILL IN . . . MAIL TODAY

N. G. 8-29

Ponsell Floor Machine Co.
220-230 West 19th St., Dept. N. G. 8-29, New York City

Please mail me complete information regarding your Electric Floor Machine. This does not obligate me in any way whatever.

Name____________________________

Address__________________________

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This Summer it's the "European Week-End"

Europe has taken its place in the category of the casual week-end affair. Seventeen days over and back—with four days for sightseeing and shopping in London and Paris—think of that! Many are adding three days to their summer vacations and treating themselves to a glimpse of Europe, with two ocean voyages for brimming measure. Sail from New York on a week-end—spend that week-end on the ocean and the next in Europe. Book on the *Majestic*, the world's largest ship, or the popular *Olympic*. For a more leisurely crossing, there's the *Homeric*, the *Belgenland*, the *Minnewaska*, *Minnetonka*, and a wide choice of moderately priced Cabin liners. The service is impeccable—the cost can be fitted to your purse.

For full information apply to No. 1 Broadway, New York City; 180 No. Michigan Ave., Chicago; 460 Market St., San Francisco; our offices elsewhere or any authorized steamship agent.

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RED STAR LINE · ATLANTIC TRANSPORT LINE
INTERNATIONAL MERCANTILE MARINE COMPANY

IMM

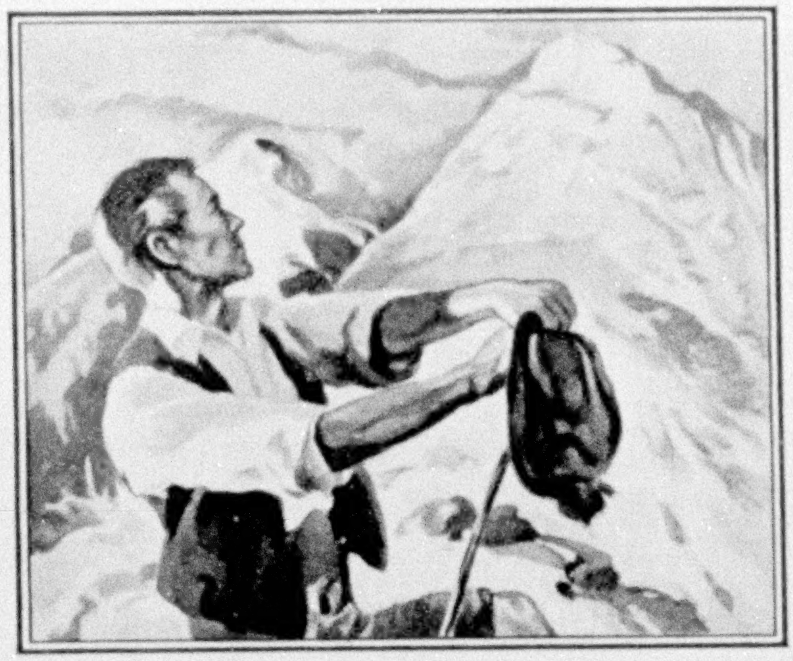
Brilliant Winter Cruises via I. M. M.

Sixth World Cruise of the *Belgenland*, largest, finest liner that has ever circled the globe—from New York Dec. 20, over a route proved perfect on her five former cruises. 133 days—28,000 miles. Operated jointly by Red Star Line and American Express Co. $1750 (up).

Also four 46-day cruises to the Mediterranean by White Star Line during January, February and March. The itinerary includes the high spots of tourist interest bordering this glamorous inland sea. $695 (up.)

Likewise a series of novel 11-day cruises to Havana, Nassau and Bermuda by Red Star liner *Lapland*. Sailing Dec. 28; Jan. 11 and 25; Feb. 8 and 22; Mar. 8. $175 (up).

PACKARD



Only through high intent and steadfast will to achieve are obstacles overcome—the heights attained

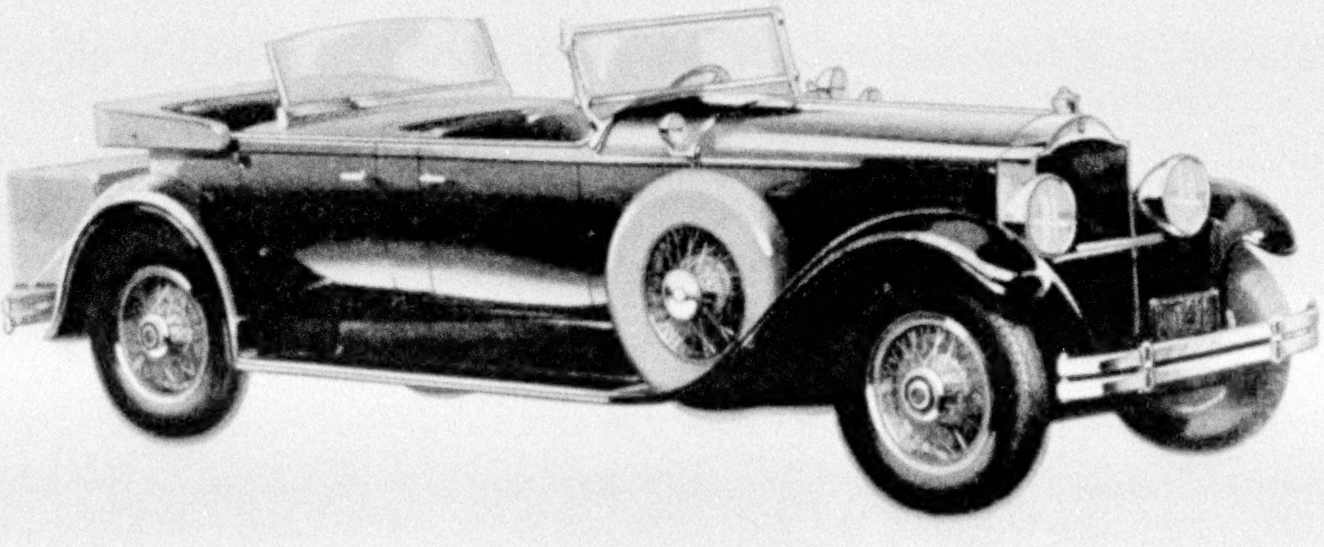
Packard has always aspired high and had but a single goal. Thirty years ago Packard chose the difficult, distant peak of perfection as its aim.

From that original intent—to build only the finest motor cars to a single standard of highest quality—Packard has never deviated. It has sought broader patronage not by building to a price, but by producing better cars.

Step by step through the years, Packard cars have been refined, improved—in beauty of design and in excellence of engineering. Facilities for their manufacture and distribution have been increased and bettered many fold. Supremacy has been attained but Packard still constantly seeks to make its cars more nearly perfect.

Packard offers its clientele today incomparably finer and more luxurious vehicles at prices which are but the natural result of increased public favor. For as Packard has prospered, it has shared its success with those discriminating motorists who buy its cars.

ASK THE MAN WHO OWNS ONE



all this

IN ONE ROUND-THE-

WORLD CRUISE

Countries of the six epochs that explain the world... Italy, Greece, Egypt, India, China, Japan. The four cities that round out the cosmopolite . . . Cairo, Calcutta, Shanghai, Peking. The two events that give the deepest thrill . . . Christmas in Bethlehem, New Year's Eve in Cairo. All made into a cruise so beautifully planned that you have 15 days in India and Ceylon, 16 days in China, 10 days through Japan. And still time for Sumatra, Java, Siam, Formosa, and much else.

All the way in the best style the world affords. On land, crack special trains, fine motor-cars, celebrated hotels. On sea, the Empress of Australia, a distinguished ship, 21,850 gross-tons... with marble bath suites, spacious single rooms, Roman pool.

Your host, mentor and guide is the *world's greatest travel system*. From New York, Dec. 2, 137 days. From $2000.

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MEDITERRANEAN [2]

Two Mediterranean Cruises next winter . . . such is the demand. Choice of Empress of Scotland, 25,000 gross-tons, spreading ease; Empress of France, 18,350 gross-tons, yacht-like smartness. Choice of 2 sailing dates, February 3 and February 13. Both from New York and 73 days. Both cruises cover the same highly endorsed, perfected itinerary of previous years. All the usual Mediterranean ports, also Venice, Beirut, Dubrovnik, Majorca, Sicily. As low as $900.

Booklets, itineraries, ship-plans. If you have a good travel-agent, ask him. Also, any Canadian Pacific office: New York, Chicago, Montreal and 30 other cities in United States and Canada.

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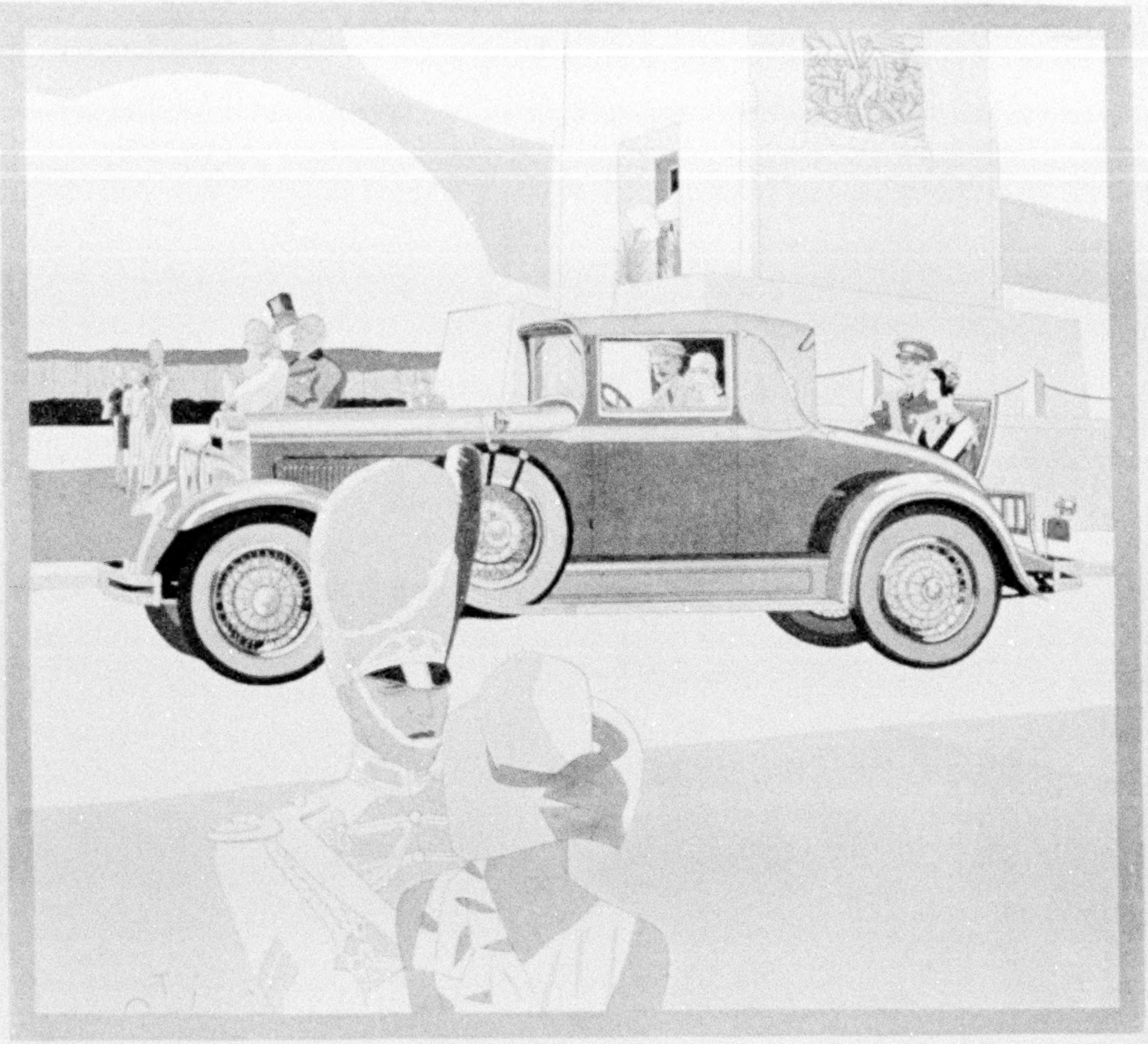
CARRY CANADIAN PACIFIC EXPRESS TRAVELLERS' CHEQUES: GOOD THE WORLD OVER



The President Eight Convertible Cabriolet, $1895. The Commander Eight Convertible Cabriolet, $1645. The Commander Six Convertible Cabriolet, $1495. Six wire wheels and trunk rack standard equipment. Prices at the factory. Bumpers and spare tires extra

BENEATH the easy, youthful grace of Studebaker's smart straight eights and sixes, there is championship stamina, unseen yet certified by *every* official stock car record, both for speed and staying power. And though clothed in matchless beauty of line and color—though masked by manners urbane and distinguished—one turn at the wheel will reveal to you unmistakably why Studebaker sells *more eight-cylinder cars than any other maker in the world.*

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Builder of Champions

We use them ourselves!

A noted automobile manufacturer was asked at a dinner party: "If you were going to build the perfect car for yourself, regardless of cost, what would it be like?"

His reply consumed the rest of the evening.

We can't help being impressed with the difference between that automobile man and ourselves. If anyone should ask us to produce our idea of the perfect trunk, regardless of cost, we should simply walk over to our factory and pick out an Oshkosh "Chief" from stock.

One of the reasons we use Oshkosh Trunks ourselves is the patented Oshkocentric Drawer Lock shown above. A single turn of your trunk key securely fastens every drawer from the rear.

This is one of several refinements of construction not to be found in ordinary trunks. We have printed a booklet that describes some of the others, and shall be glad to send you a copy if you will write us at 518 High Street, Oshkosh, Wisconsin.

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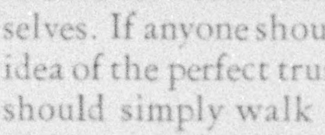
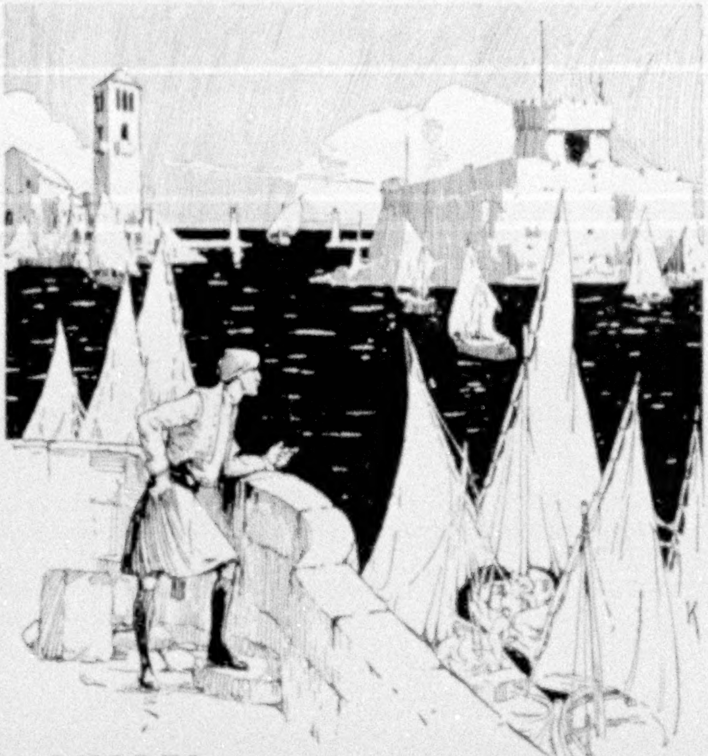


This new Oshkosh Hand Luggage is smart, light and more durable than even the best leather luggage. There are Suit Cases, Hat Cases and Shoe Cases. Priced from $20 to $50.



RHODES

the walled fortress-city of the Knights of St. John, a splendid survival of the Crusades and Middle Ages

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Sailing January 23, on the S. S. "Carinthia"

₡ The great cities of the Mediterranean—*Algiers, Naples, Constantinople* and the rest—may be taken for granted on any first-class Mediterranean Cruise. It is the smaller places—picturesque and strikingly characteristic of their countries—that give true distinction to a cruise and special satisfaction to cruise members. ₡ In such places the Raymond-Whitcomb Mediterranean Cruise is unusually rich, with visits to *Rhodes; Valona* in unknown *Albania; Cyprus,* with memories of Richard Coeur de Lion and Othello; *Ragusa* and *Cattaro,* typical Balkan towns on the magnificent Dalmatian Coast . . . Rates, $1000 and upward.

Send for the booklet, "THE MEDITERRANEAN CRUISE"

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₡ An unusual cruise, completely encircling South America. Sailing February 1, on S. S. "*Samaria.*" Limited to small membership and best rooms. Rates, $1250 and upward.

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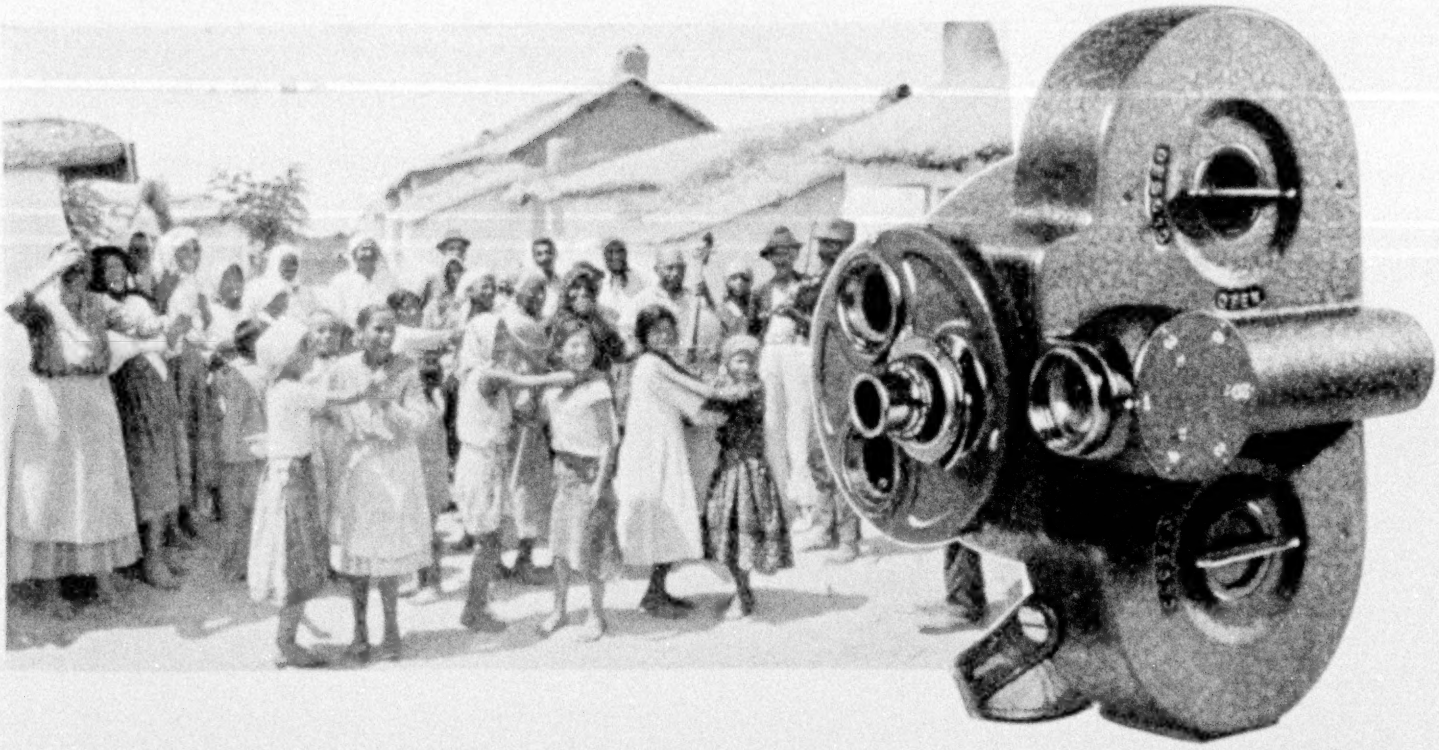

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THE NEW 7 - SPEED FILMO 70·D

... and the skill of an expert Hollywood cameraman is put in your hands by this master of all personal movie cameras—the new Filmo 70 D.

Close-ups, long shots, s-l-o-w motion, *faster* action ... movies of your travels such as were never known before are at your fingertips with the seven speeds, three-lens turret, and variable viewfinder of this amazing new star in personal moviedom.

A toy? Far from it. An amateur camera? Only in its utter simplicity. Filmo 70 D is a small model of its $5,000 brothers in the professional field. Yet it costs but $245 and up in its Mayfair carrying case of English saddle leather, equipped with SESAMEE lock.

Ask your Filmo dealer to demonstrate Filmo 70 D or write us for literature and the illustrated movie booklet, "What you see, you get."

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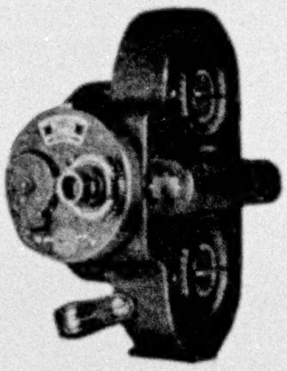
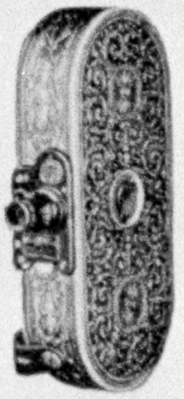
BELL & HOWELL
Filmo
WHAT YOU SEE, YOU GET



Filmo 70 A, the original personal movie camera, surpassed only by Filmo 70 D, $180 and up with carrying case.



Filmo 75, pocket size and aristocratic, $120 and up with carrying case.

* * *

All Filmos take either a 50 or 100 foot roll of film.

For black and white pictures, Filmo Cameras use Eastman Safety Film (16mm.) in the yellow box—both regular and panchromatic—obtainable at practically all dealers handling cameras and supplies. Filmo Cameras and Filmo Projectors are adaptable, under license from Eastman Kodak Company, for use of Eastman Kodacolor film for home movies in full color. Cost of film covers developing and return postpaid, within the country where processed, ready to show at home or anywhere with Filmo Projector.

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In Sunny Spain

In Seville. The romantic old city. Where Carmen lived and danced and loved and had her fling. A Fete Day. The Bull Ring. The dancing Street Gypsies. And the gorgeous old Palace, the Alcazar. Thence, back to Cadiz, a city of three thousand years. Cadiz, the port of the Spanish Galleons; with their cargoes of gold and silver. Guitars, castanets, serenade, romance and enchantment—on the

Mediterranean Cruise Supreme

from New York January 25th, next

The Homeric—one of the world's foremost ships—the largest steamer to the Mediterranean takes you to all the right places at the right time—14,000 miles—65 days—a wondrous itinerary — the unfrequented Balearic Islands, Malta, Corsica and Cyprus . . . the fascinating cities of Casablanca and Barcelona . . . with happy days in Madeira, Gibraltar, Algiers, Monaco, Naples, Sicily, Greece, Turkey—two weeks in Egypt—the Holy Land. Generous stay-over privileges, returning via England on the Majestic, Olympic or Homeric.

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Maintenance afloat and ashore. Automobile sightseeing trips included. *Sailings from New York each Saturday.*

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Maintenance afloat and ashore. Sightseeing trips in Havana, Progreso, Mexico City. *Sailings from New York each Thursday.*

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The Four Princes

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FOUR new motorships, the "Northern Prince," "Eastern Prince," "Southern Prince," and "Western Prince," inaugurate a new era in South American travel! Regular passenger service now in effect from New York to Rio de Janeiro, Santos, Montevideo, and Buenos Aires. The last word in speed, travel luxury, and safety.

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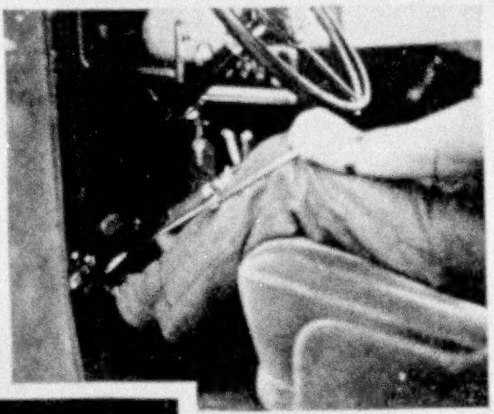
FURNESS *Prince* LINE

Prince Line Service has been continuous between N. Y. and So. America for 35 years

No. 5. *Inside pictures of the General Motors Proving Ground*

AT General Motors' 1268-acre Proving Ground in Michigan, automobiles are subjected to tests so rigid that the customary precision instruments were found inadequate. So the engineers have developed special devices and test methods which eliminate variables and measure the details of construction and performance with exactitude. The facts determined and studied with an Open Mind are used for the continuous improvement of General Motors cars.



Above. The fuel consumption of a car is important to its owner. The Proving Ground device shown here measures this phase of performance—and so precisely that "miles per gallon" becomes virtually "drops per foot."

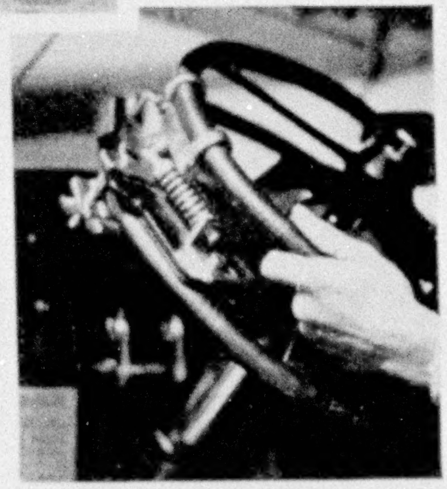
Below. This device is a telemeter, which measures vibration electrically and accurately. Another specially developed instrument, based on the principle of the microphone, measures noises within the car.

Above. This special instrument, developed by the Proving Ground engineers, measures clutch pedal pressure. Still other devices have been developed to record acceleration and deceleration to a degree of accuracy previously unknown.

Below. Steering ease is another big factor in safety and driving comfort. Shown here is a "duplicate" steering wheel which the engineers have developed to measure steering effort.

Above. The large picture shows a group of Proving Ground engineers examining the precision device described at the upper right. The "fifth wheel," shown at the rear wheel of the car, is another specially developed instrument which measures exact speed.

Altogether more than 135 different tests are employed at the Proving Ground in the separation of fact from opinion and the *proving* of General Motors cars.



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BUICK · LA SALLE · CADILLAC · *All with Body by Fisher*
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FRIGIDAIRE—*The Automatic Refrigerator* · DELCO-LIGHT *Electric Power and Light Plants*
DL *Water Systems* · GMAC *Plan of Credit Purchase*

TUNE IN — General Motors Family Radio Party. Every Monday evening. 8:30 Eastern Standard Time. WEAF and 37 other stations associated with N. B. C.

7 SHAVES FREE
and a can of Palmolive After Shaving Talc
Simply insert your name and address and mail to Palmolive, Dept. B-3093, 595 Fifth Ave., New York City.
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This Coupon
is our ad

Words, we know, will never win you. So we stand or fall on 7 days' trial. Yet this simple test has made Palmolive Shaving Cream a leader quickly

GENTLEMEN: All any advertising can accomplish is to secure a trial of the product. After that the article itself must do its own selling.

So great is our confidence in Palmolive Shaving Cream that we do not ask you to buy; rather, to try it at our expense. For we find that 86% of men who try it, buy it. And its great success is based on the fact that it sells itself every time you use it.

So we print our coupon conspicuously for your convenience. When you mail it to us, half our job is done. Will you send it now?

5 remarkable features

1. Multiplies itself in lather 250 times.
2. Softens the beard in one minute.
3. Maintains its creamy fullness for 10 minutes on the face.
4. Strong bubbles hold the hairs erect for cutting.
5. Fine after-effects due to palm and olive oil content.

To add the final touch to shaving luxury, we have created Palmolive After Shaving Talc—especially for men. Try the sample we are sending free with the tube of Shaving Cream.

PALMOLIVE RADIO HOUR — Broadcast every Wednesday night from 8:30 to 9:30 p. m., Eastern time; 7:30 to 8:30 p. m., Central time; 6:30 to 7:30 p. m., Mountain time; 5:30 to 6:30 p. m., Pacific Coast time—over station WEAF and 39 stations associated with The National Broadcasting Company.

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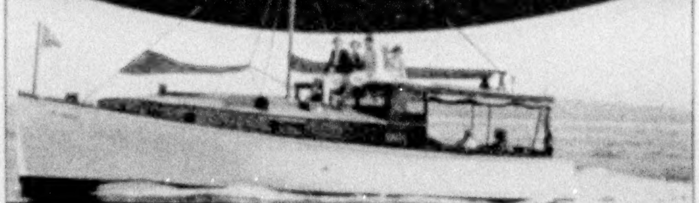

THE MATTHEWS CO., Port Clinton, Ohio, U. S. A.
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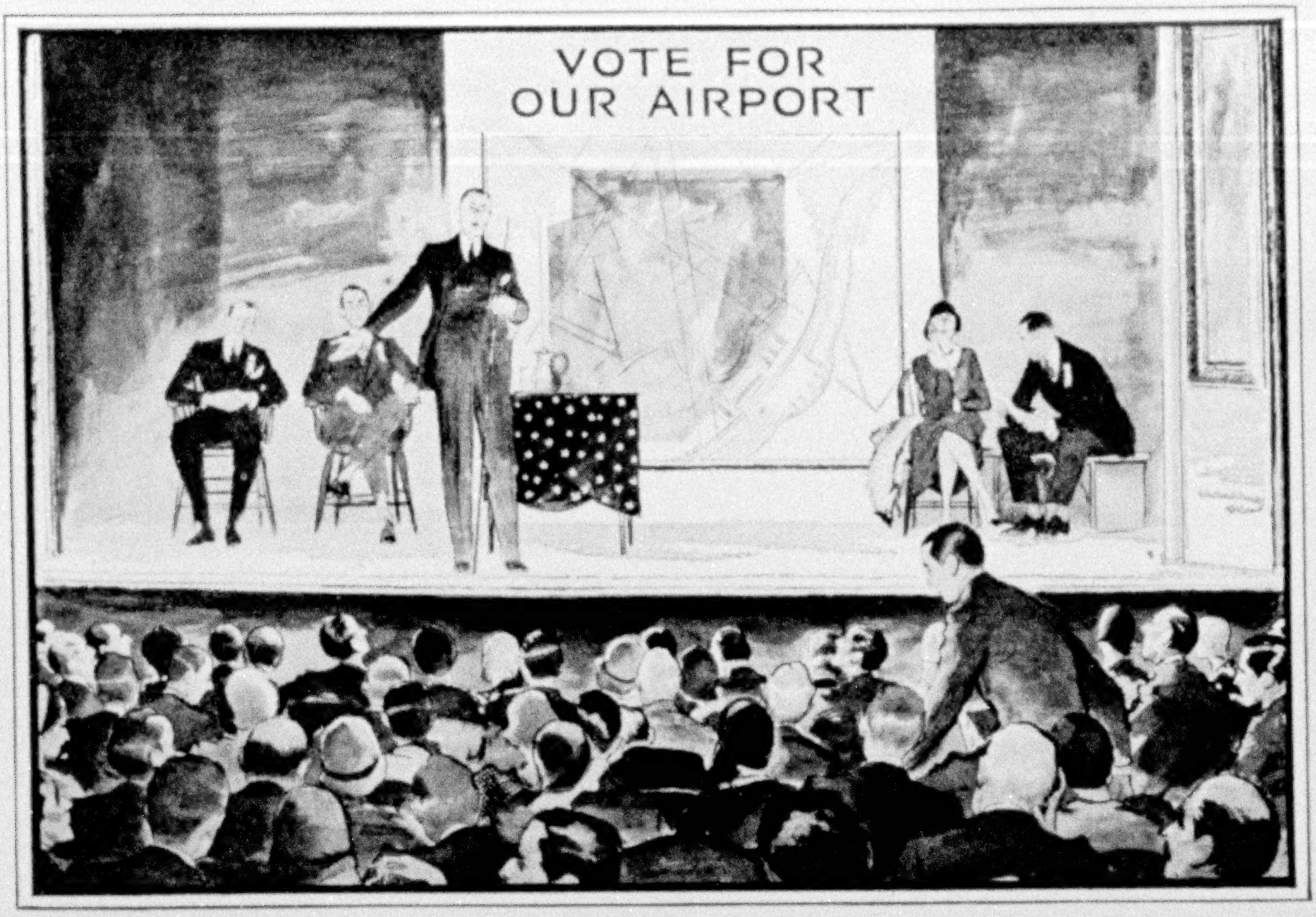


"ARE WE AIR-MINDED? . . ."

You might never have heard of Medford, if the people of Medford had not seen a vision in the sky above the mountains of Oregon, west of Lake Klamath. . . . That was the day they realized a new map of the world is being drawn in invisible lines across the heavens! . . . That was the day they determined that Medford should be known in the skies as a harbor . . . open to the commerce of the world.

Medford established the first municipal airport in the State of Oregon in 1922. By 1926 it was a regular port of call for the Pacific Air Transport. In 1928 a fleet of twenty-six ships arrived, including three great tri-motored Ford planes. Medford began to feel cramped!

When a vote was taken on a bond issue of $120,000 for a Class A airport, it was the largest ever polled at a special election in Medford, *and the bond issue carried by a majority of 2248 to* 182!

This awareness of the small towns and cities of the west to the great significance of commercial aviation is worthy of serious consideration. For the town that ignores the possibilities of reaching the world through the sky is deaf to the call of real opportunity.

In the course of the next few months you will see new names come into prominence, names that are little known today. You will hear of Waynoka as an air-rail junction . . . of Clovis as a terminal of importance . . . of others north, east, south and west. . . .

From an economic viewpoint, this year will be one of the most important in the development of the new transportation. Great transportation lines will be inaugurated, tying city to city, ocean to ocean, continent to continent, by routes that will be measured not in miles, but in terms of time. *Already it is possible for an airplane to take off in St. Louis and reach any part of the United States within twenty-four hours. Already planes have kept aloft for more than a week of continuous flying.*

As the development of the automobile depended upon the extension of good roads, so the general usefulness of the airplane depends now upon the establishment of adequate landing fields, lighted routes, and town-markers visible from the sky.

It is noteworthy that over 5000 cities and towns with population from 1000 to 50,000 have placed aerial guides upon their roofs, both to identify themselves and to assist in the navigation of the air. Some face the sky conspicuously. Some vaguely. *But the great majority of American towns and cities are virtually blank spaces from the sky!*

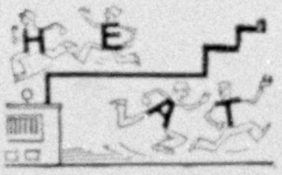
Many great corporations like Ford and Standard Oil make it a practice to mark their properties, to be clearly identified from above. For the ships of the air are already vital factors of commerce, looking always for new harbors and new markets!

FORD MOTOR COMPANY

Did you live in *half* your house *last winter?*

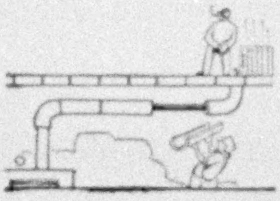
YOU spend money for coal, oil or gas. You burn this fuel in a heating plant. You generate heat easily, quickly, economically. Yet this heat is useful only when it reaches the radiators and spreads its warmth out through your rooms. Was all of your house warm last winter? Or were there parts that were uncomfortable?

Heat lost from the pipes between furnace and radiator is wasted. Such losses occur through radiation along any line of bare pipes and are responsible for cold rooms and chilly corners because of radiators that never get hot enough.



Yet it is easy to cut this waste to a minimum, by insulation—by covering the pipe lines with heat-resisting material.

The natural source of pipe insulation is Johns-Manville, the oldest and largest manufacturer of asbestos insulation. The logical insulation for the pipes in any home, old or new, is J-M *Improved* Asbestocel. Each length of Asbestocel is scientifically designed to enclose non-circulating air shut up in hundreds of cells within asbestos walls. This dead, non-circulating air cannot carry off heat.



If you plan to build, tell your heating contractor that you want the heating pipes covered with money-saving, comfort-giving Asbestocel. Or if your present home needs only warmth to make it perfect, any plumber or heating contractor can quickly provide the necessary insulation. Asbestocel is identified by a red band on the inner end of each section.

Johns-Manville
IMPROVED ASBESTOCEL PIPE INSULATION

JM

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New York Chicago Cleveland San Francisco Toronto
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Please send me your free booklet about Asbestocel.

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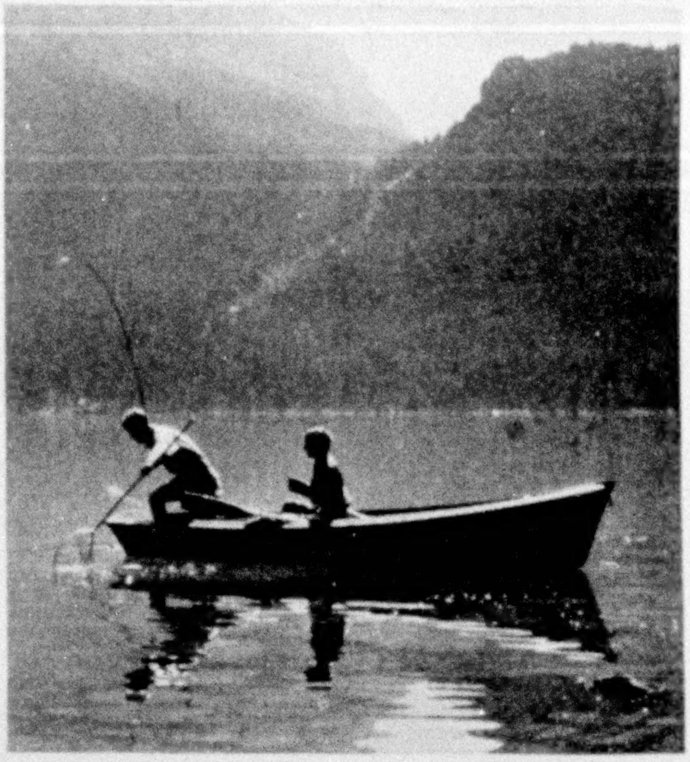
RODS THAT WILL BE YOUR PRIDE



WINCHESTER
TRADE MARK

THERE'S something about a Winchester bamboo rod you sense the moment you take it in hand—an added thrill in the handling from strike to net—a confidence that your rod, like a Winchester gun, will "play the game" right through with you from start to finish.

Note the rich, brown colored stock. It's a special Winchester treatment that adds mightily to the backbone of the rod.

Note the serrated, water-proofed ferrules, used on all Winchester bamboo rods except those of the lowest price class.

Most fly rods, and many of the others in the line, have the Winchester lock-tight, screw-type reel seat—made with specially coarse threads that assure workability under all conditions.

There's also a fine selection of Winchester steel rods, precision-built reels and luring spoon baits—all of Winchester quality. Look them over today at your favorite sporting goods or hardware dealer's. And ask him or write us for—

FREE BOOKLET
"The Winchester Idea"

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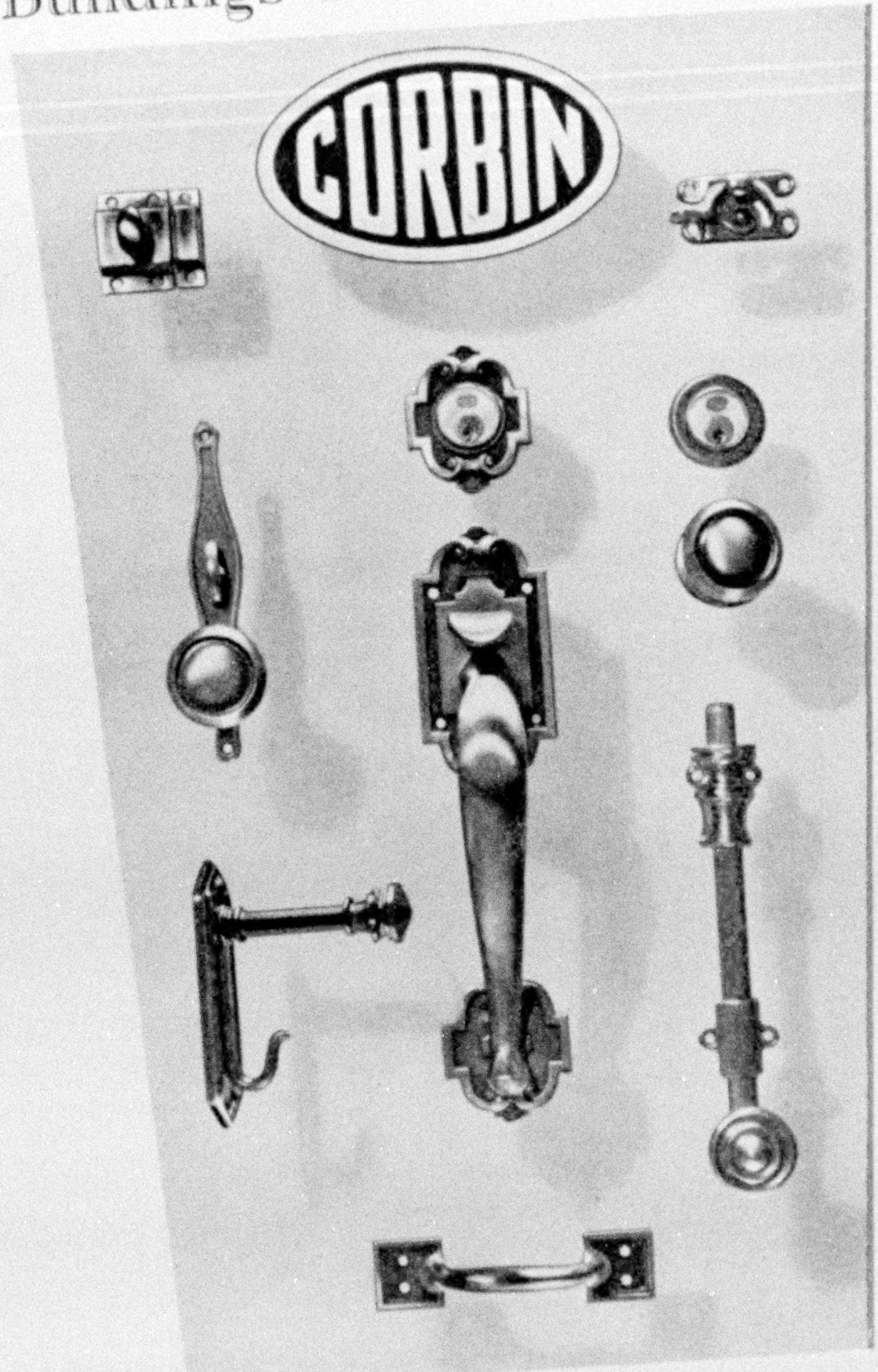
Made by the Makers of WINCHESTER
Guns and Ammunition
Fishing Tackle
Flashlights and Batteries
Cleaning and Lubricating Preparations
Cutlery
Tools—Ice and Roller Skates
Radiators

WINCHESTER HEADLIGHT
When biking home, be guided by a Winchester Headlight. It fastens to your head, throws light wherever you look and leaves you both hands free. One of the new-style lights introduced by Winchester—a modern type of light for every need.

Good Buildings Deserve Good Hardware



Knobs, handles, latches, lifts and turns

All different—All important—All authentic in design—all made by Corbin.

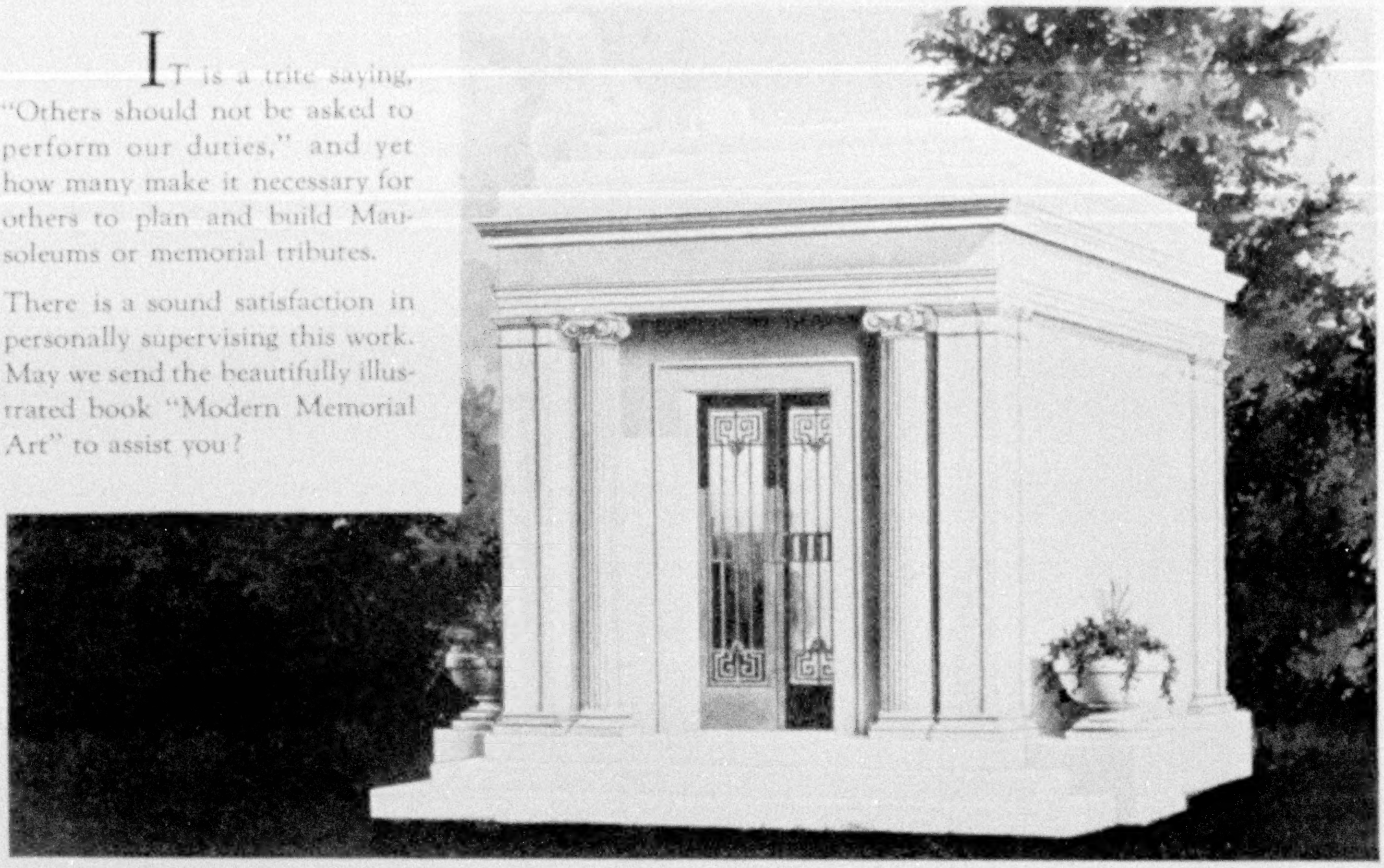
GOOD! That's the kind of a house you want, isn't it? And that's the only kind you should expect to build. Why? Well—first, because it doesn't cost any more. Second—because a good house lasts. Third—because it will never offend your sense of beauty and good taste.

All of which applies to hardware as much as it does to roofs. If it's good hardware it won't have to be continually repaired. Therefore, its first cost will be your last cost. And because good hardware serves longer than most of us live, it will never have to be replaced. You and your children's children will appreciate the inherent good looks of Good Hardware—Corbin, and enjoy its beauty. For Good Hardware—Corbin assures visible beauty as well as invisible perfection.

Yes, your new home must be good. One word to your architect and contractor—"Corbin"—and you may be sure your hardware—all of it—will be Good Hardware.

Is "good" the word that describes the kind of a home you want to build? Then let our booklet "Good Buildings Deserve Good Hardware" help you in choosing Good Hardware for your good home. Write Dept. N-8.

P. & F. CORBIN SINCE 1849 NEW BRITAIN CONNECTICUT
The American Hardware Corp., Successor
New York Chicago Philadelphia



IT is a trite saying, "Others should not be asked to perform our duties," and yet how many make it necessary for others to plan and build Mausoleums or memorial tributes.

There is a sound satisfaction in personally supervising this work. May we send the beautifully illustrated book "Modern Memorial Art" to assist you?

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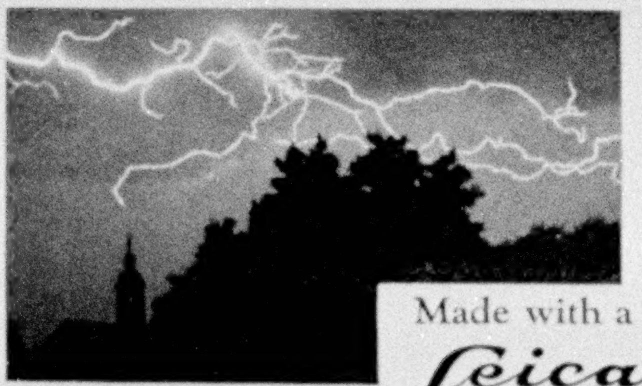
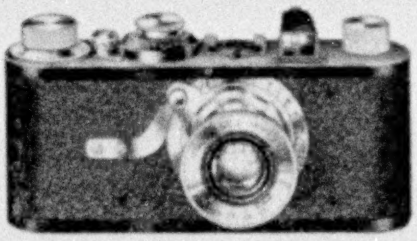


Made with a Leica

A remarkable picture taken with a remarkable camera, the Leica. Accompanies the Byrd Expedition and is the companion of enthusiastic explorers, scientists and all who value perfection.



THE smallest roll film camera with focal plane shutter. The first camera using cinema film to give negatives of double frame size. Thirty-six pictures on a single load. Enlargements to 12" x 18" or more are sharp and clear. Mechanically and optically a perfect instrument, unaffected by climatic conditions. Equipped with a Leitz Anastigmat F 3.5; shutter speeds 1/20 to 1/500 sec. See the Leica at your dealer or write for illustrated literature.

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Send Pamphlet 1127G5 on the Leica Camera.

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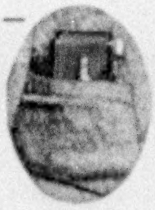

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THROUGHOUT America, in communities ranging from large metropolitan cities to small trading centers, bankers who have the confidence of their communities will invariably be found the most ardent advocates of safety as the first, and most important, principle for setting up a serious program of investing. Throughout America, too, bankers favorably know Straus offerings and choose from them for recommendation to investors and for their own reserves. S. W. STRAUS & CO. have prepared an interesting, easy-to-understand booklet, "How To Invest Money." Every person seriously concerned in safeguarding his future should own a copy of this booklet. It will be sent you without charge.

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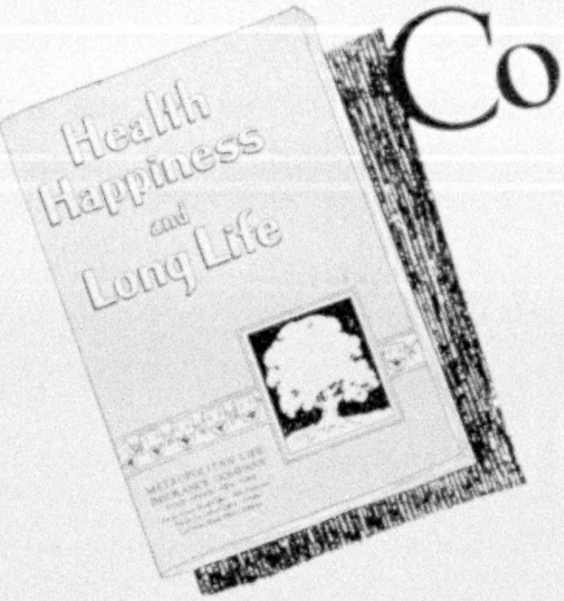
Health Happiness and Long Life
Metropolitan Life Insurance Company

Common Sense

A FAMOUS doctor said, "Many of the people who want me to diagnose and treat their ailments are more impressed by some scientific medical apparatus than by plain, common sense advice. And they are more willing to follow orders faithfully if given some special office treatment.

"Recently a man I know well came in looking haggard. I gave him a thorough physical examination while inquiring about his living habits. The diagnosis was clear but the patient a problem. If I had told him the simple truth that what he needed most to get back his health and strength was to slow down, sleep more, and get the proper amount of fresh air and exercise, he would have thought I did not understand the complications which were undermining his health. And if I had sent him a bill for such advice, he would have told his friends that I was a robber and not fit to practice medicine.

"So I gave him a treatment with a scientific apparatus and wrote a simple prescription. At the same time I gave strict orders as to what he should eat and drink, how many hours he might work, how long he should remain in bed, and the amount of time he should devote to outdoor exercise. To make sure that he was following my orders concerning his living habits, I had him report once a week for further observation and treatments. In a few weeks he was well. He will tell you—and he believes it—that I am a great doctor.

"Perhaps someone may say my methods with him were open to criticism. But it was my responsibility to use every means within my power to bring him back to good health. Knowing my patients as I do, I know that many of them will not obey my orders for *correct living habits* if given without special treatment or medicine. More than half of the people who consult me would not have to do so if they would learn and practice important rules of health. They expect me to cure them of physical ailments which they could easily have avoided."

A majority of cases of physical let-down and distress are caused by careless or wilful violation of health rules. Bad eating habits, too little sleep and rest, lack of fresh air and exercise, worry, self-pity are responsible for many cases of bad digestion, headaches, poor circulation, constipation, jumpy nerves, depression and run-down condition.

* * * *

THE LIGHT THAT NEVER FAILS

The Metropolitan Life Insurance Company has had a booklet prepared by eminent health experts which tells simply and clearly the fundamental rules of intelligent living habits. A chapter or more is devoted to each one of eleven important rules of health under the headings Sleep and Rest, Fresh Air, Sunlight, Exercise, Cleanliness, Water, Food, Comfortable Clothing, Work and Play, Good Posture and Good Mental Habits.

Metropolitan Life Insurance Company
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Booklet Department 89-N
Gentlemen:

Please mail free, without any obligation on my part, a copy of your booklet, "Health, Happiness and Long Life."

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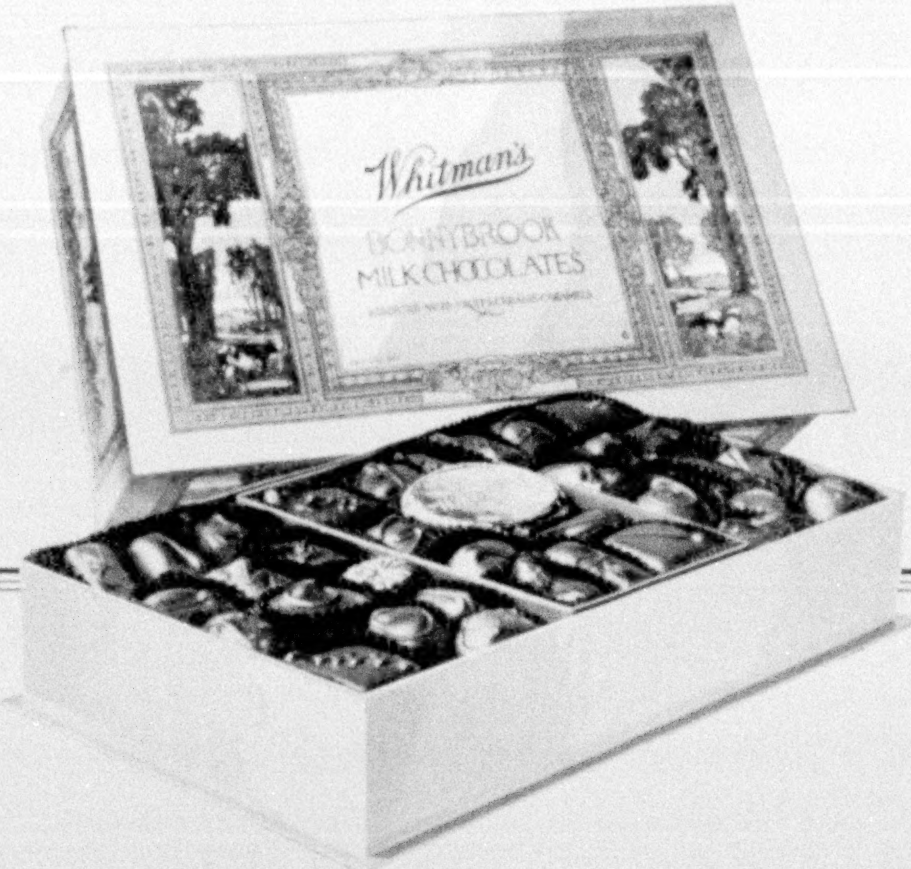
METROPOLITAN LIFE INSURANCE COMPANY—NEW YORK

Biggest in the World, More Assets, More Policyholders, More Insurance in force, More new Insurance each year

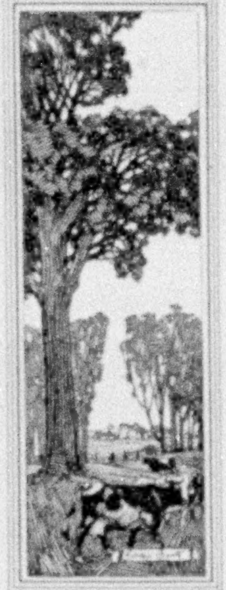


For Halcyon Days

For golden vacation days there is no better companion than this golden box of BONNYBROOK MILK CHOCOLATES. Food and pleasure for active sportsmen and equally competent sportswomen. A delightful aid, also, to those who merely rest in "the rocking-chair fleet."

Because of the pure milk chocolate, sugar, vanilla, nuts, fruits and other pure ingredients, and the manner of their mixing, BONNYBROOK MILK CHOCOLATES withstand the heat to an unusual degree.

Because of these same merits they appeal to every taste. Eye and palate alike are pleased and their fragrance becomes a sweet memory.



Whitman's BONNYBROOK MILK CHOCOLATES

follow the vacationist wherever he goes. Almost every remote summer resort has a Whitman agent who gets his stocks of Whitman's direct and always fresh and perfect. © S. F. W. & Son, Inc.

STEPHEN F. WHITMAN & SON, INC., PHILADELPHIA

NEW YORK CHICAGO SAN FRANCISCO

Vol. LVI, No. 2 WASHINGTON August, 1929

THE NATIONAL GEOGRAPHIC MAGAZINE

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ST. MALO, ANCIENT CITY OF CORSAIRS

An Old Brittany Seaport Whose Past Bristles with Cannons and Cutlasses

By Junius B. Wood

Author of "Russia of the Hour," "Seeing America from the 'Shenandoah'," "A Visit to Three Arab Kingdoms," etc., in the National Geographic Magazine

FOUR old salts, smoking stubby pipes just like any picture-book sailors, are gossiping on a sunny rock outside of St. Malo rampart walls. Half a mile across the beach a few hardy resorters are splashing in the chill Brittany surf. The smooth floor of sunlit sand is sprinkled with croquet sets, tennis courts, tents, and camp chairs, children flying kites, dogs digging holes, groups building castles of sand and seaweed, and an occasional strolling native gravely inspecting the strangely clad city visitors.

The fluff and flurry of the 20th century have enveloped St. Malo. The grizzled sons of the corsairs who made England hot with rage for lost ships and who carried the name of St. Malo around the world through the half century before 1825, now sail forth to battle with the gaily tinted herring and the peaceful oyster. An annual fishing cruise to the Grand Banks of Newfoundland is the longest venture.

The stores of merchants who staked fortunes on a single privateering expedition now have other owners, whose modern show windows display bathing suits or high-heeled shoes. St. Malo no longer needs to dare the waves in search of foreign booty. Instead of fleets and armies, excursion boats come with tourists. Syncopated music and the ivory ball tinkle in the casinos until dawn, but the old St. Malo, silent and hard, is back of it all.

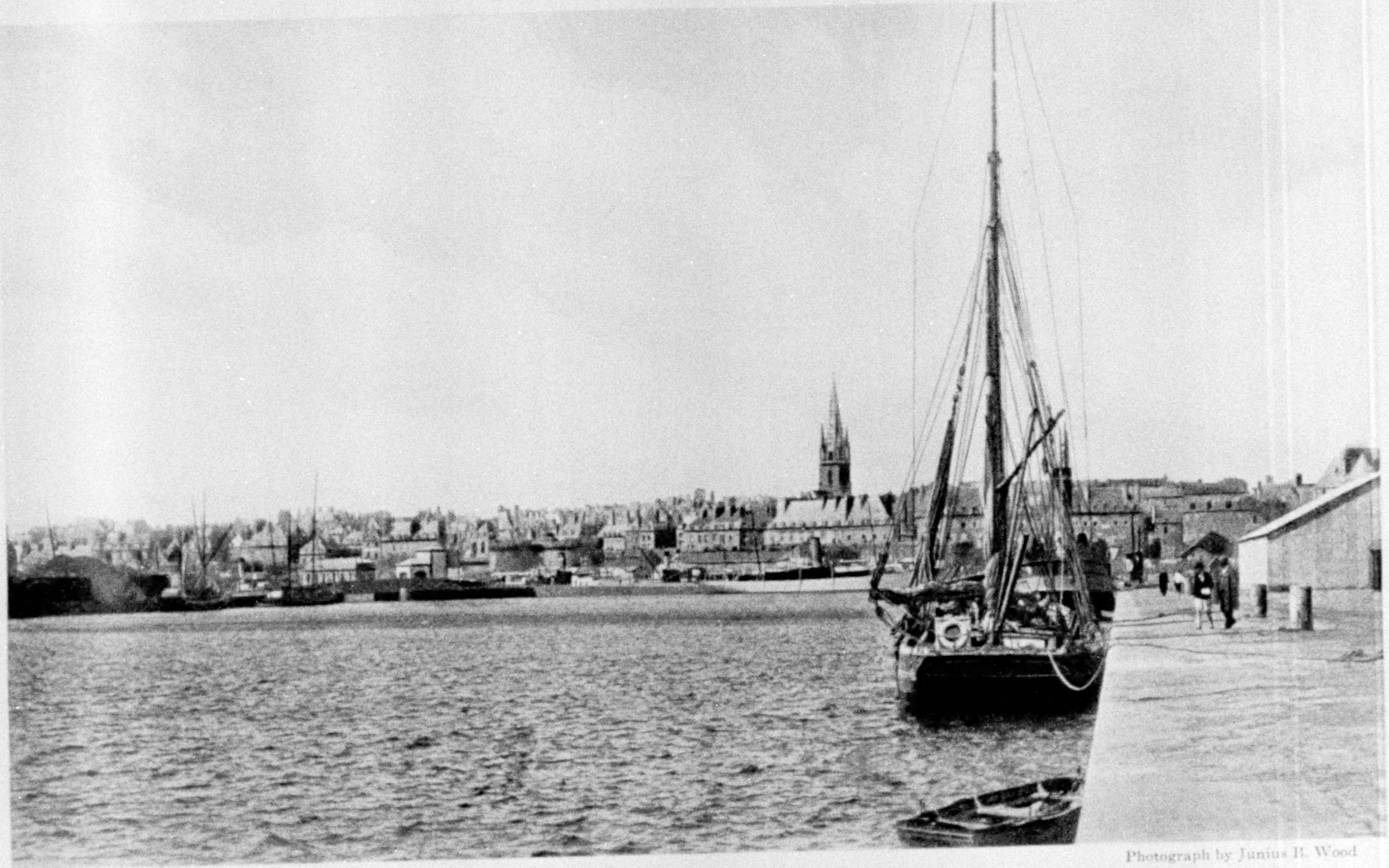
THE MALOUIN TAKES THE SEA SERIOUSLY

The old lure of the sea, the lore of the Celt, and the stout Breton heart persist. Pleasure-seekers may come to rest and frolic on sand and surf, but the *Malouin* has no such use for the sea. To him it is serious, the element from which a living is to be wrested, the inevitable grave—the same as the land.

As I came ashore one day, shivering from a plunge, an old fisherman called out to me, "Why learn to swim? When the ship is wrecked, you drown. It ends quicker."

In the years of its greatness, St. Malo flung to the winds of every clime the colors of France and its own corsair flag of blue with the white cross and sleeping ermine. No other city in France was so well known in the Americas and the Indies. One of its sons gave Canada to France, another captured Rio de Janeiro, another blockaded the Ganges, another took Madras. St. Malo's toll of English shipping was set at 382 warships and 4,510 merchantmen.

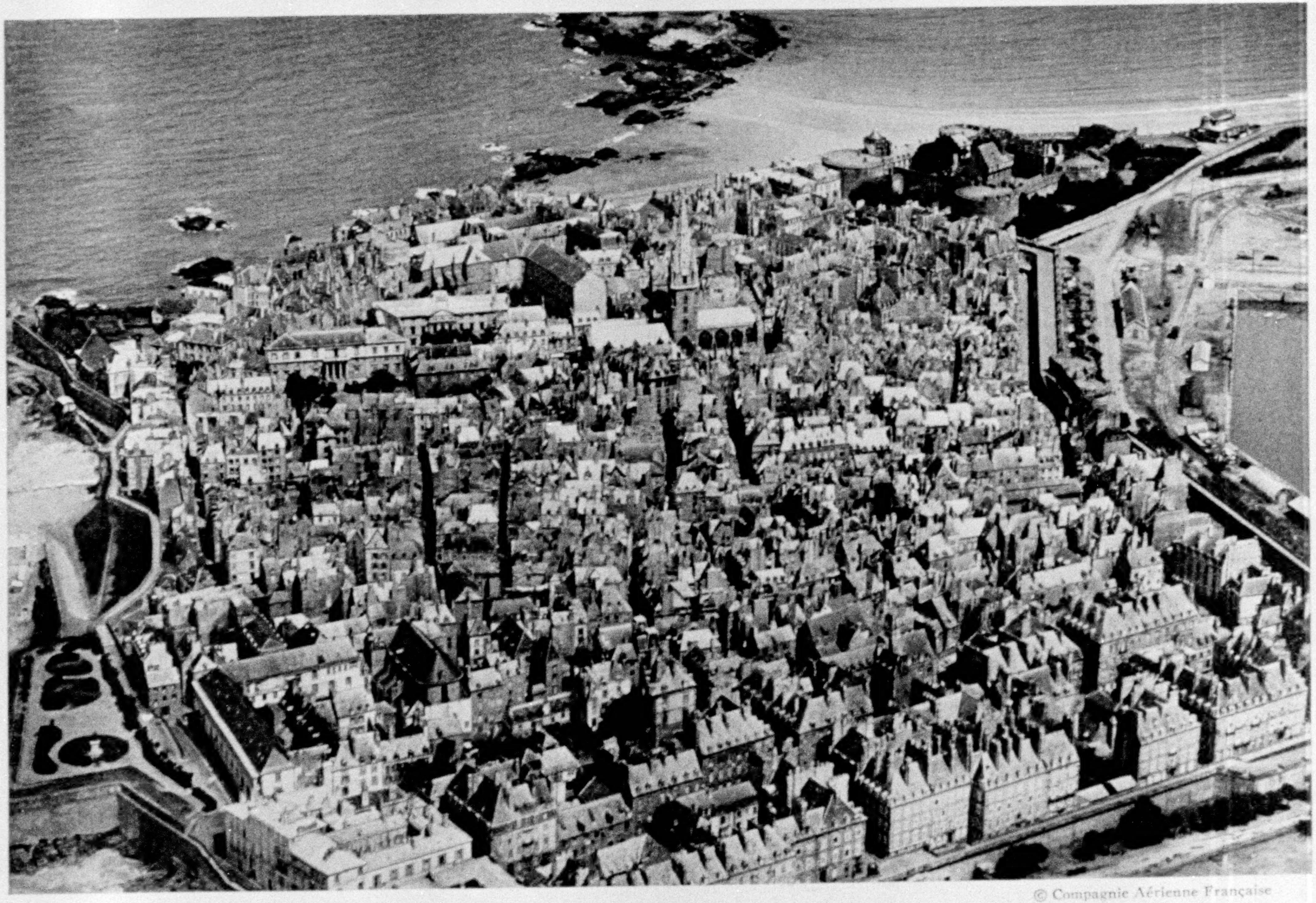
England and Holland sent fleets and armies to batter down the "scourge of the seas." St. Malo fought back as blithely



Photograph by Junius B. Wood

PUNY HEIRS OF THE CORSAIRS' CRAFT RIDE IN THE INNER HARBOR

Here it was, in the brave days of old, that daring adventurers set out in their fast-sailing ships to harass English merchantmen. Now fishing smacks and small passenger steamers are all that remind one of the stirring activities of the ancient sea rovers.



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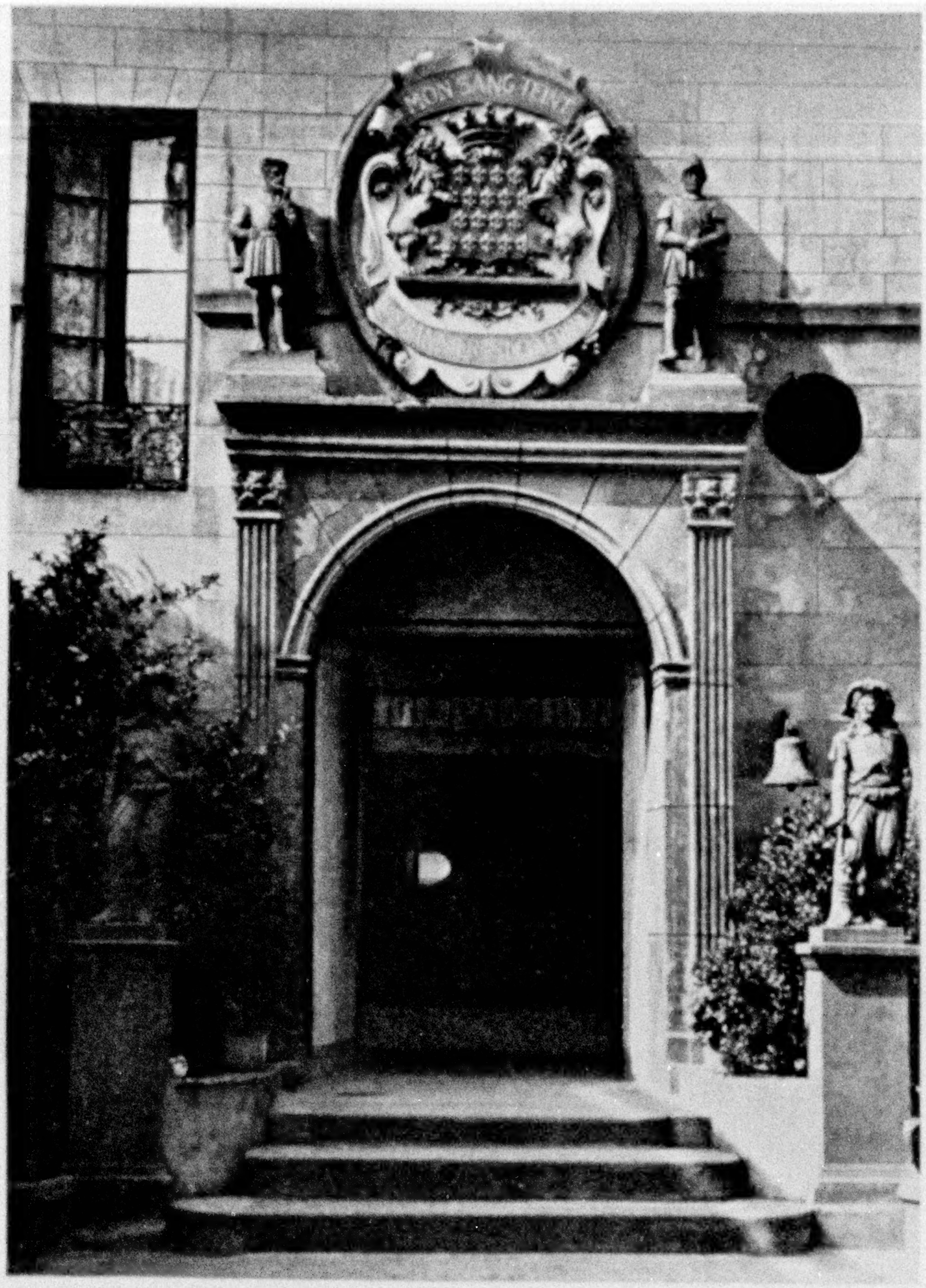
SEEN FROM THE AIR, CLOSE-PACKED ST. MALO BRISTLES



Photograph by Junius B. Wood

CHATEAUBRIAND'S HOME IS NOW PART OF A HOTEL

The famous romanticist, philosopher, and poet, whose coat of arms, with its motto, "My blood tints the banners of France," surmounts this doorway, is revered as the favorite son of St. Malo. Though his parents were only visiting in the City of Corsairs at the time of his birth, they later became permanent residents. A public square and a street bear the name of the great writer.

as it fought with kings of France, dukes of Brittany, or its own triple-headed government. The City of Corsairs loved to fight either on the water or on its own rocky isle.

To-day, as then, the tide rises and falls twice in each 24 hours—30 feet ordinarily, more than 40 when the sea runs full.* Castles of sand and seaweed disappear at the flood, the scars of the day are smoothed—even Canute of Denmark could not sit on that shore—and the waves break against the 12th-century ramparts.

The islands fortified by Vauban stand out black against the setting sun. Clear above the serried hills of steep roofs the crenelated spire of old St. Vincent's pricks the sky of mottled red and green. Grim structures of steel-gray granite, flecked with mica which sparkles in the sun, slope down to the broad ramparts and the squat towers of the citadel outside. St. Malo of the ages endures.

"MY BLOOD TINTS THE BANNERS OF FRANCE"

The old mansion of René Auguste de Chateaubriand is part of the Hôtel de France et Chateaubriand. Over the doorway of the building, facing the courtyard, is the coat of arms of his famous author son, François René de Chateaubriand, with its motto, "My blood tints the banners of France."

When the little Chateaubriand ran through St. Thomas's Gate to play on the sands, the public square which bears his name was a moat and Rue Chateaubriand was The Street of the Jews, the prescribed residence of that race. Later a guillotine was on the square, and then a statue of Chateaubriand by Aimé Millet, the latter now on the terrace of the Casino outside the walls, a bronze philosopher amid the nightly din of modern dance music, clattering glassware, and laughing lovers.

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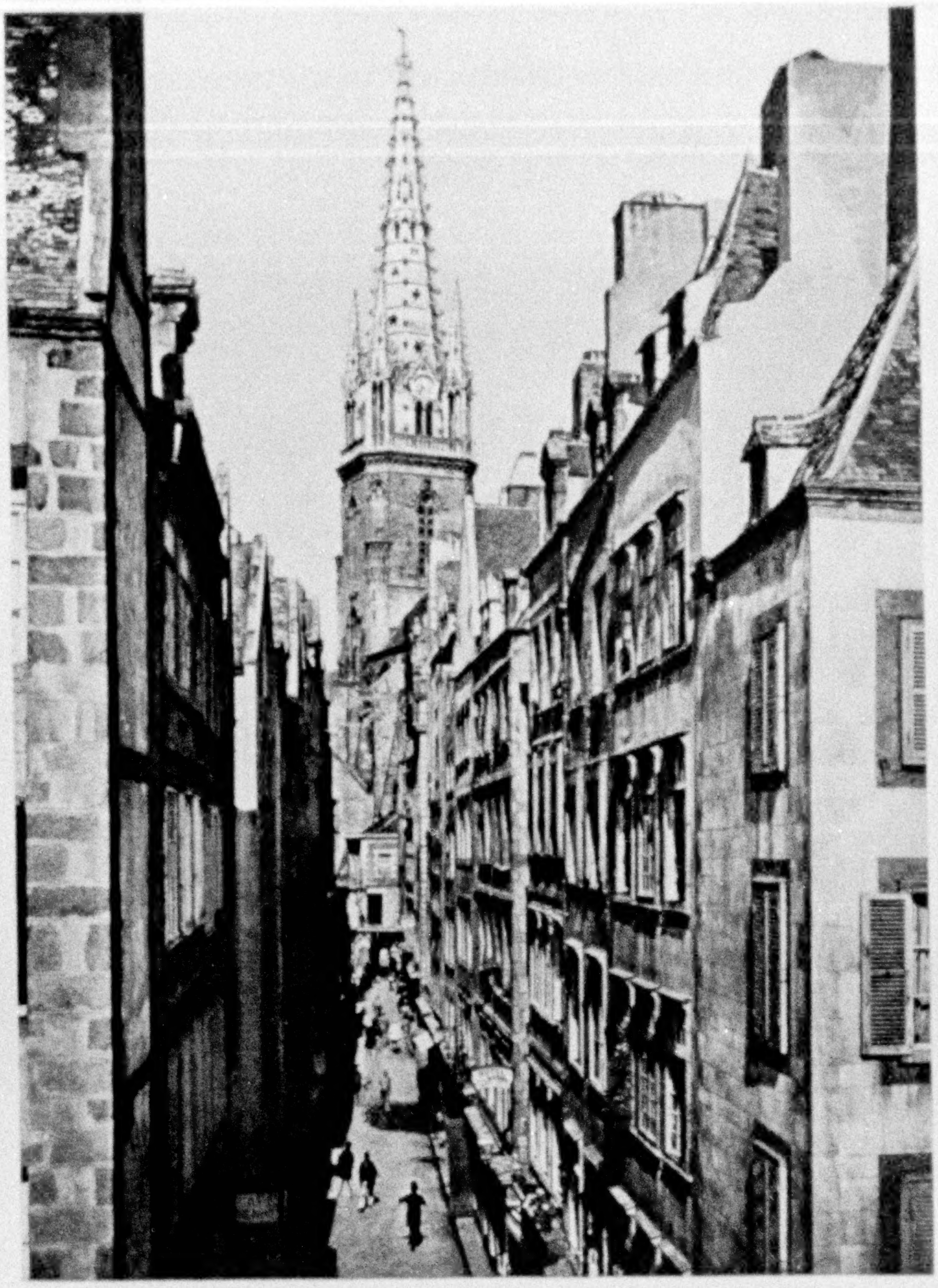
* See, also, "Through the Back Doors of France in a Canadian Canoe," by Melville Chater, in the NATIONAL GEOGRAPHIC MAGAZINE for July, 1923.

"And who was Chateaubriand, Hal?" a buxom matron was asking the family oracle, as the party stood on the rampart promenade and peered at the window of the room in which guidebooks say François René was born on September 4, 1768.

"Some people remember him as an author, but more know him as a cut of beefsteak," witty George explained.

The restaurant historian was wrong. The steak is named after another Breton, Françoise de Foix, Comtesse de Châteaubriant, favorite of François I, who lived some 250 years before the other spelling became famous.



OVER THE NARROW CANYON OF GRANDE RUE LOOMS ST. VINCENT'S

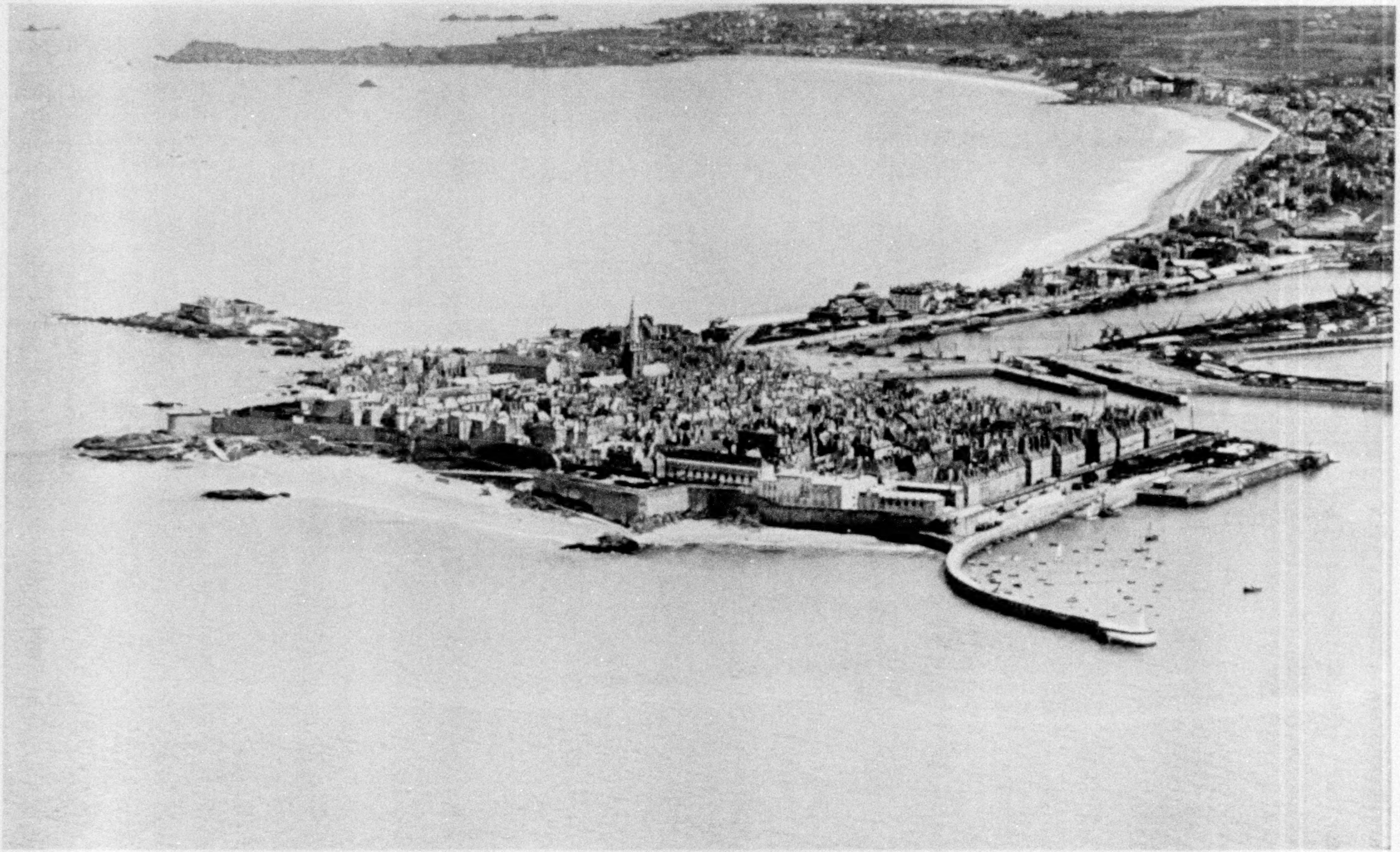
Napoleon III, in his enthusiasm for Brittany, gave orders to build a spire for St. Malo, meaning the Church of St. Malo at Dinan. The architect mistook the Emperor's intention and erected the gift on what was then the cathedral, now church of the first class, of the City of Corsairs. With streets like this, the ancient town will never be troubled by modern traffic (see text, page 151).

ST. MALO'S WHO'S WHO

Blue and white enamel signs immortalize other notable personages of St. Malo. In 1839 the names of most of the public squares and of nearly all the streets, except those leading to the principal gates, were changed to honor those who made the town famous.

The list is long—as Chateaubriand proudly said, "fairly satisfactory for a town which is not so large as the Tuileries Garden."

Old names, suggestive of vanished landmarks—Dancing Cat, Broken Drum, Gluttony, Commune, Lancet, Dames of Light Habits, Big Steps, Little Steps, Harp, Break of Day, Old Butter, Soft Grass, Pillory, Street Sweepers, Hangman—have been changed to make a St. Malo Who's Who. The best known are: Jacques Cartier, discoverer of the St. Lawrence River; Maupertuis, the mathematician; La Mettrie, exposer of quacks; Dr. Broussais, early evolutionist; Porcon de la Barbinais, given a parole by the Algerian pirates and beheaded when he returned; Mahé de La Bourdonnais, captor of Madras and the "governor" in "Paul and Virginia"; Félicité Lamennais, famous agnostic; Archbishop Trublet, whose family antedated



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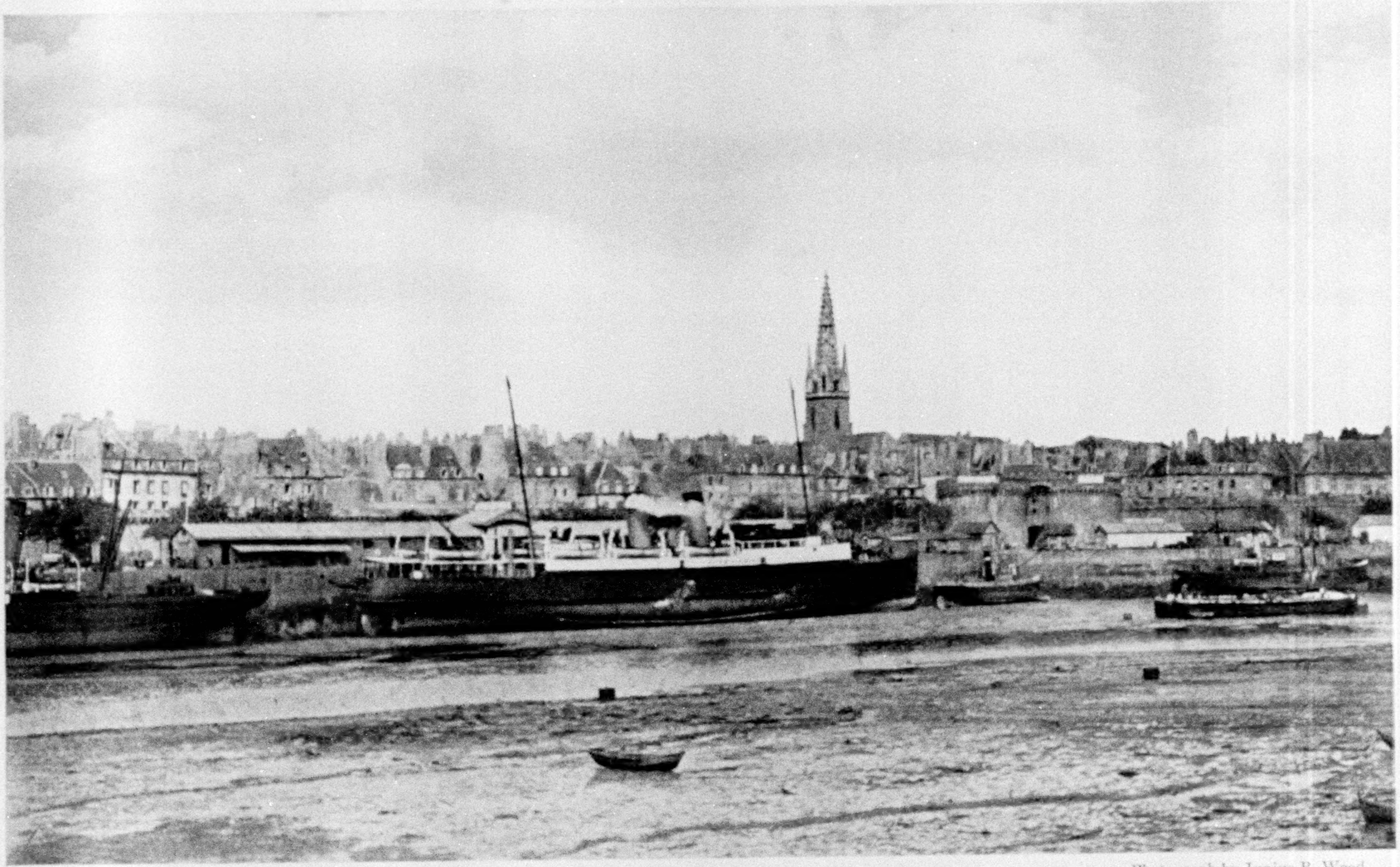
A CAUSEWAY CONNECTS ST. MALO WITH THE MAINLAND

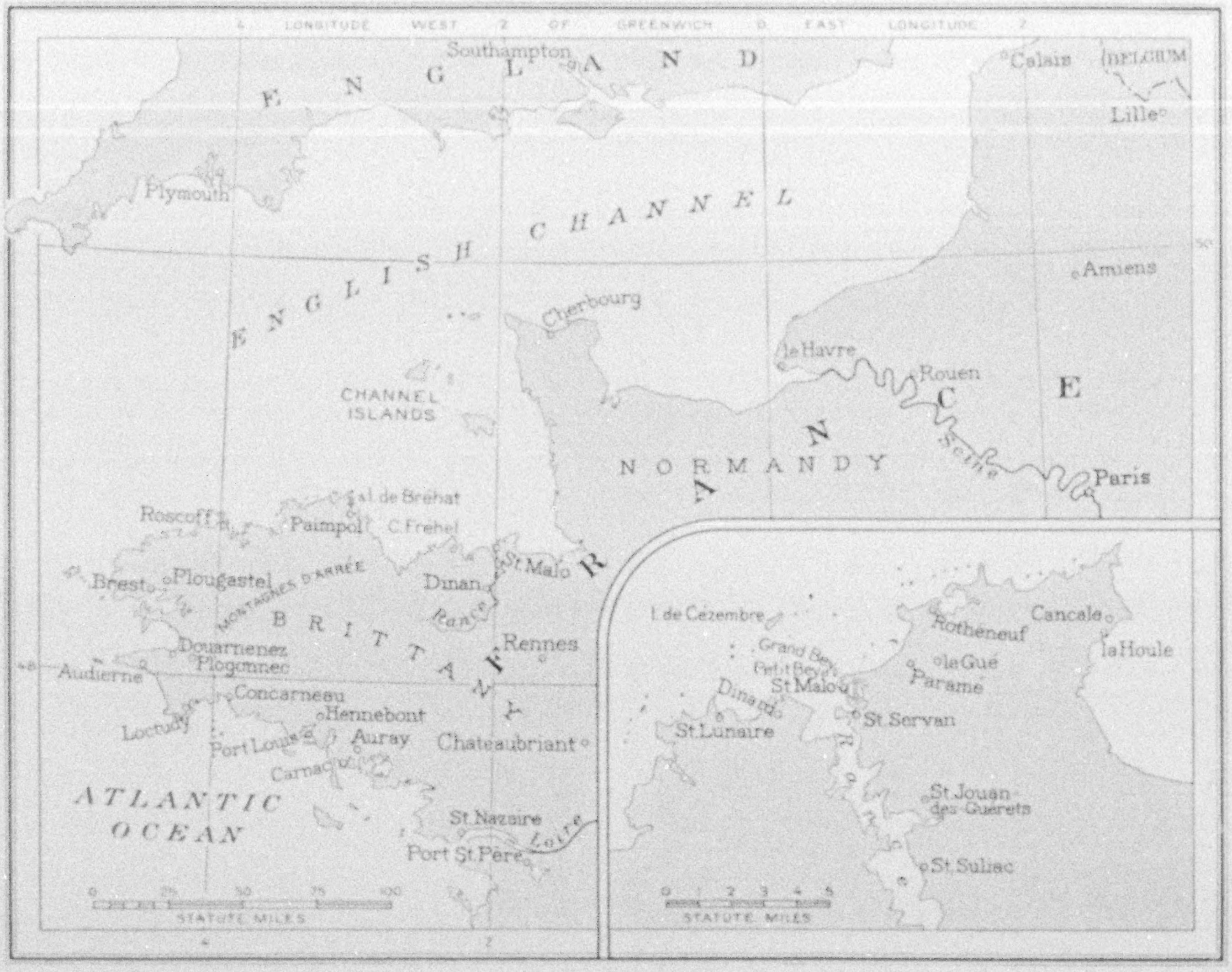
When the City of Corsairs was in its glory, the fortified rock on which it stands was surrounded by water at high tide. Now the neck of the peninsula is never submerged. The Malouin of old built for safety and, since there was only so much space on strongly fortified rock, he must "find room at his elbow" for his tall stone house.



Photograph by Junius B. Wood

WHEN THE TIDE IS OUT, THE JERSEY STEAMER SITS ON THE GROUND

In the days of sailing vessels, St. Malo was a veritable king of the seas, but now large ships find the harbor dangerous and the ocean liners do not put in here. The old city must be content with lesser passenger craft, such as this, which runs to the Channel Isles.


LONGITUDE WEST OF GREENWICH EAST LONGITUDE
ENGLAND
Southampton
Plymouth
Calais
BELGIUM
Lille
ENGLISH CHANNEL
Amiens
Cherbourg
CHANNEL ISLANDS
le Havre
Rouen
Seine
Paris
FRANCE
NORMANDY
I. de Bréhat
Roscoff
Paimpol
C. Frehel
St. Malo
Brest
Plougastel
MONTAGNES D'ARRÉE
Dinan
Rance
BRITTANY
Rennes
Douarnenez
Plogonnec
Audierne
Concarneau
Hennebont
Loctudy
Port Louis
Auray
Chateaubriant
Carnac
ATLANTIC OCEAN
St. Nazaire
Loire
Port St. Père
STATUTE MILES
I. de Cezembre
Grand Bey
Petit Bey
St. Malo
Dinard
St. Lunaire
Rotheneuf
Cancale
la Houle
le Gué
Paramé
St. Servan
St. Jouan des Guerets
St. Suliac

Drawn by J. M. Darley

A MAP OF THE WESTERN PENINSULA OF FRANCE AND OF ST. MALO AND ITS ENVIRONS

The venerable City of Corsairs, an important Brittany seaport for more than a thousand years, is situated on a granite island, now connected with the mainland by a causeway, on the right bank of the estuary of the River Rance (see illustration, page 136).

Hermit Aaron (see text, page 142); de Gournay, France's first industrialist; Admiral Boursaint, wealthy suicide; Count Thévenard, France's first cannon founder, and even Benjamin Franklin, whose thrift struck a responsive Malouin chord.

The stone Croix du Fief, now over a street corner, marked the spot on the original ramparts where the bishop's feudal estate started outside the walls. Its fountain is a city water hydrant, but the old shrine to the Virgin is in the wall.

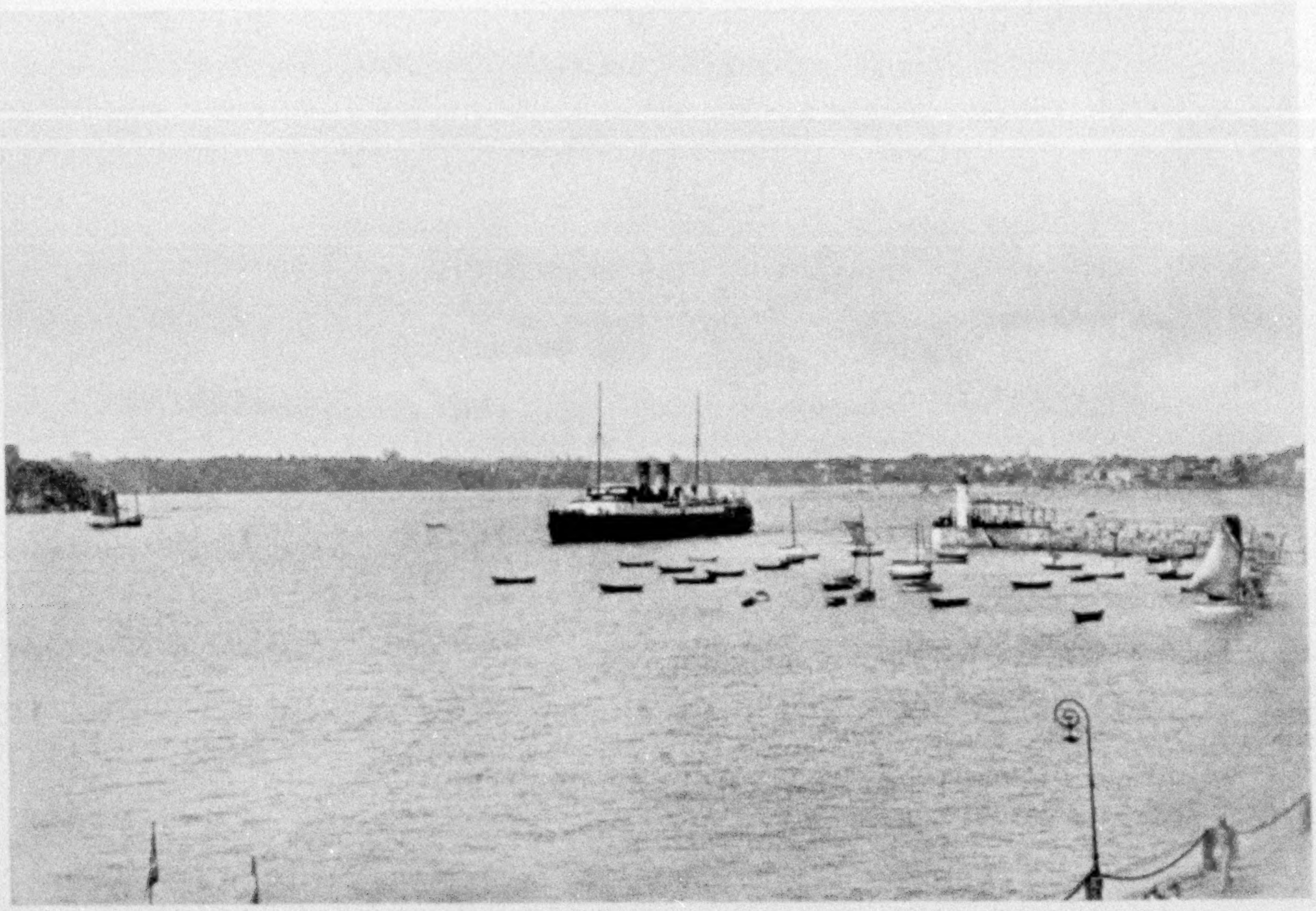
The bishop's town crier stood under the cross to shout the names of bankrupts, tax-dodgers, short-weight merchants, and those guilty of blasphemy—strange offense for a seafaring town—sentenced to the pillory. Before each Holy Week he droned a warning to Jews to leave the city "during the week they had made Jesus suffer."

St. Thomas's Gate takes its name from a chapel. The Breton sailor, when not pirating, loved to pray, and St. Thomas was his favorite saint. The gate was endowed with its original shrine by a crew who told their credulous fellow townsmen how the patron had saved them from an octopus that had wrapped its arms about their craft.

The grog was strong in those days and the tale was vivid. When the shrine was built, however, the sailors divided St. Thomas's glory, adding to his statue a painting of themselves shooting the octopus from a yardarm.

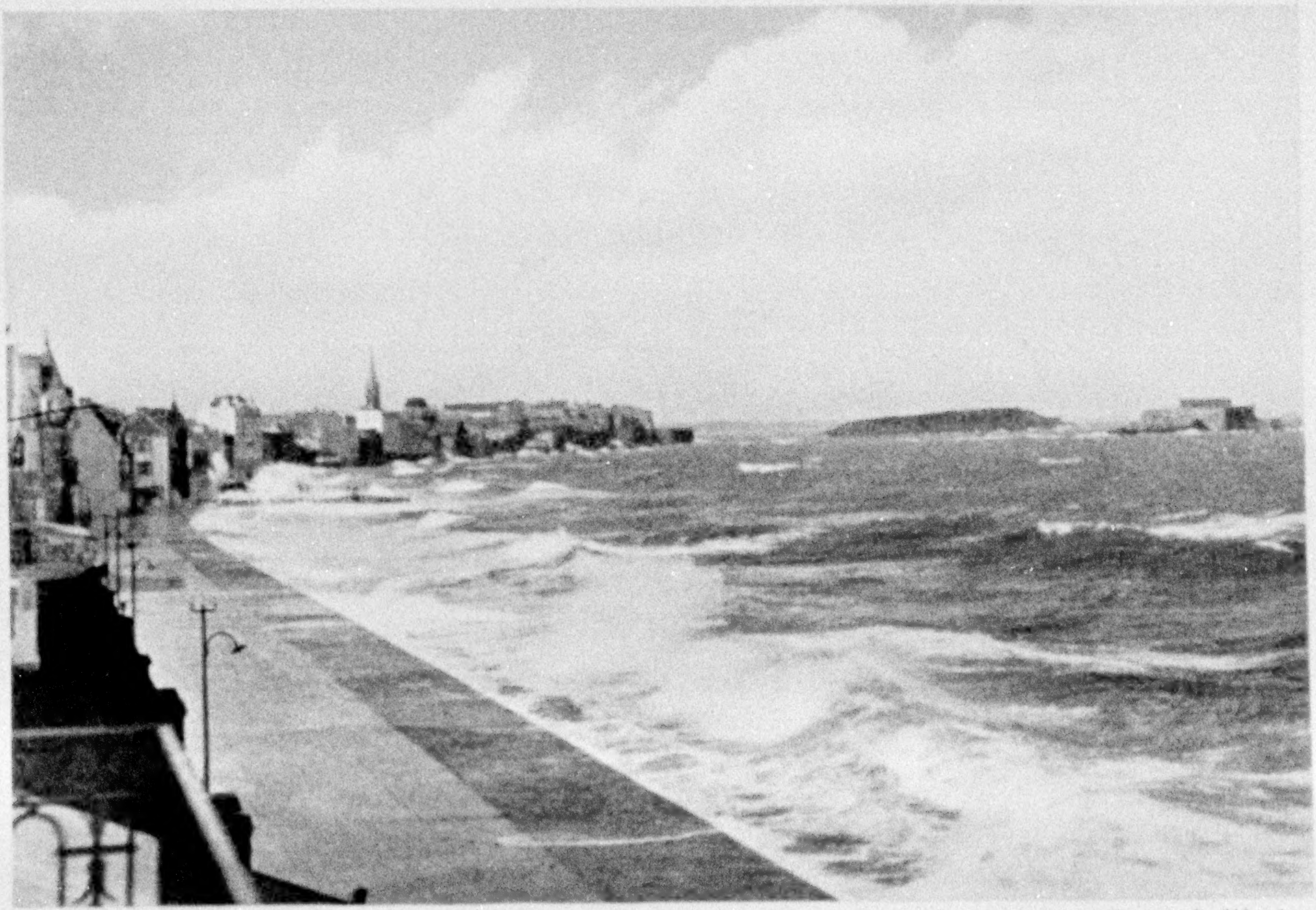
ENGLISH WATCHDOGS GUARDED CORSAIRS' BEACH

Through the gate from the beach, skirting the Château's Quiquengrogne Tower (see text, page 151), across the Chateaubriand Square and a few steps up the street of the same name, the Venelle aux Chiens (Alley of Dogs) branches off to the left.



ONCE THESE WATERS WERE NOT SO SAFE FOR ENGLISH SHIPS

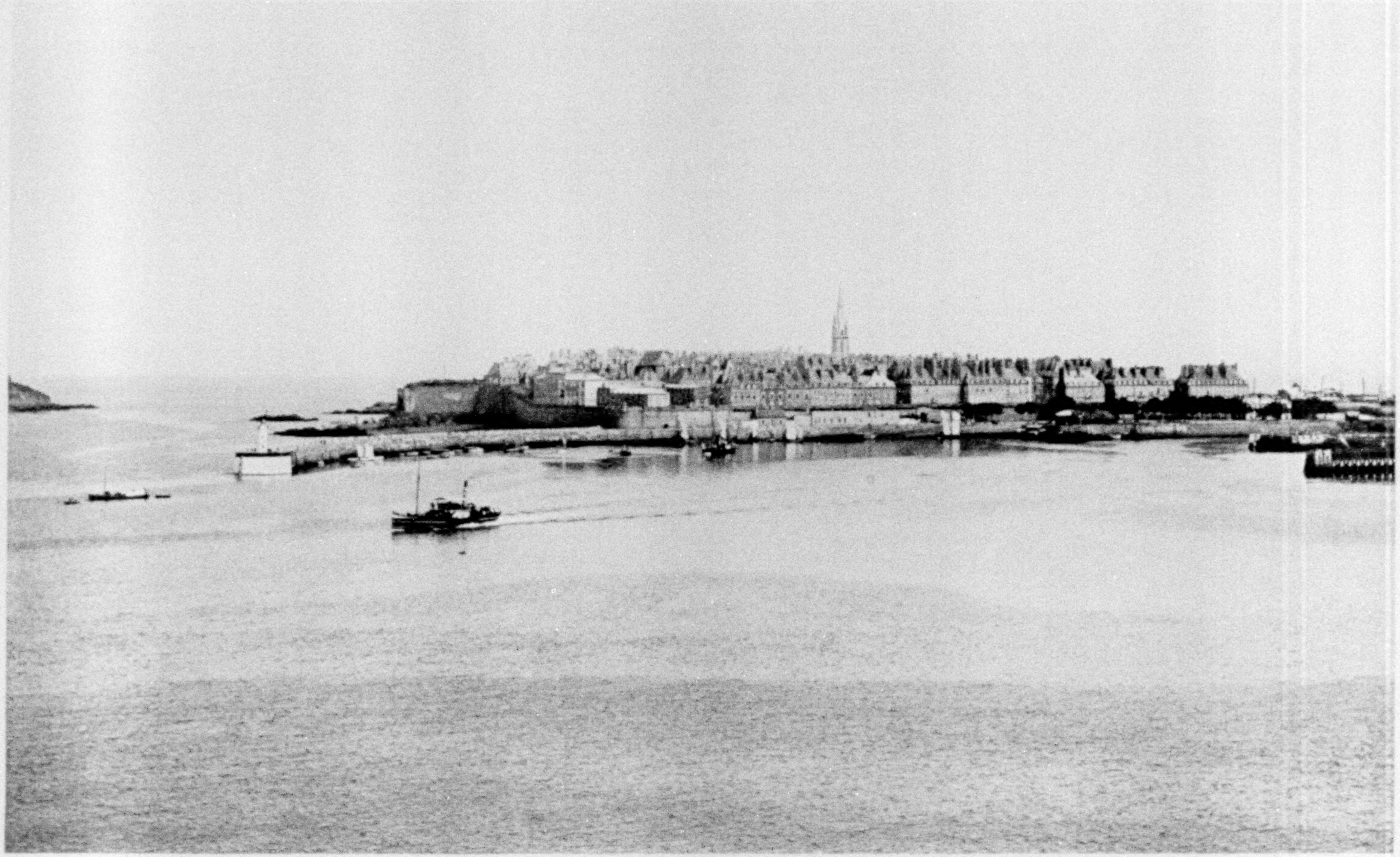
The Southampton steamer is seen here entering the harbor between the City of Corsairs and St. Servan, where, in the days of Surcouf and Duguay-Trouin, many a British vessel was taken as a prize (see text, page 131). To-day the Malouins' only tribute from their neighbors across the Channel is derived from the tourist trade.



Photographs by Junius B. Wood

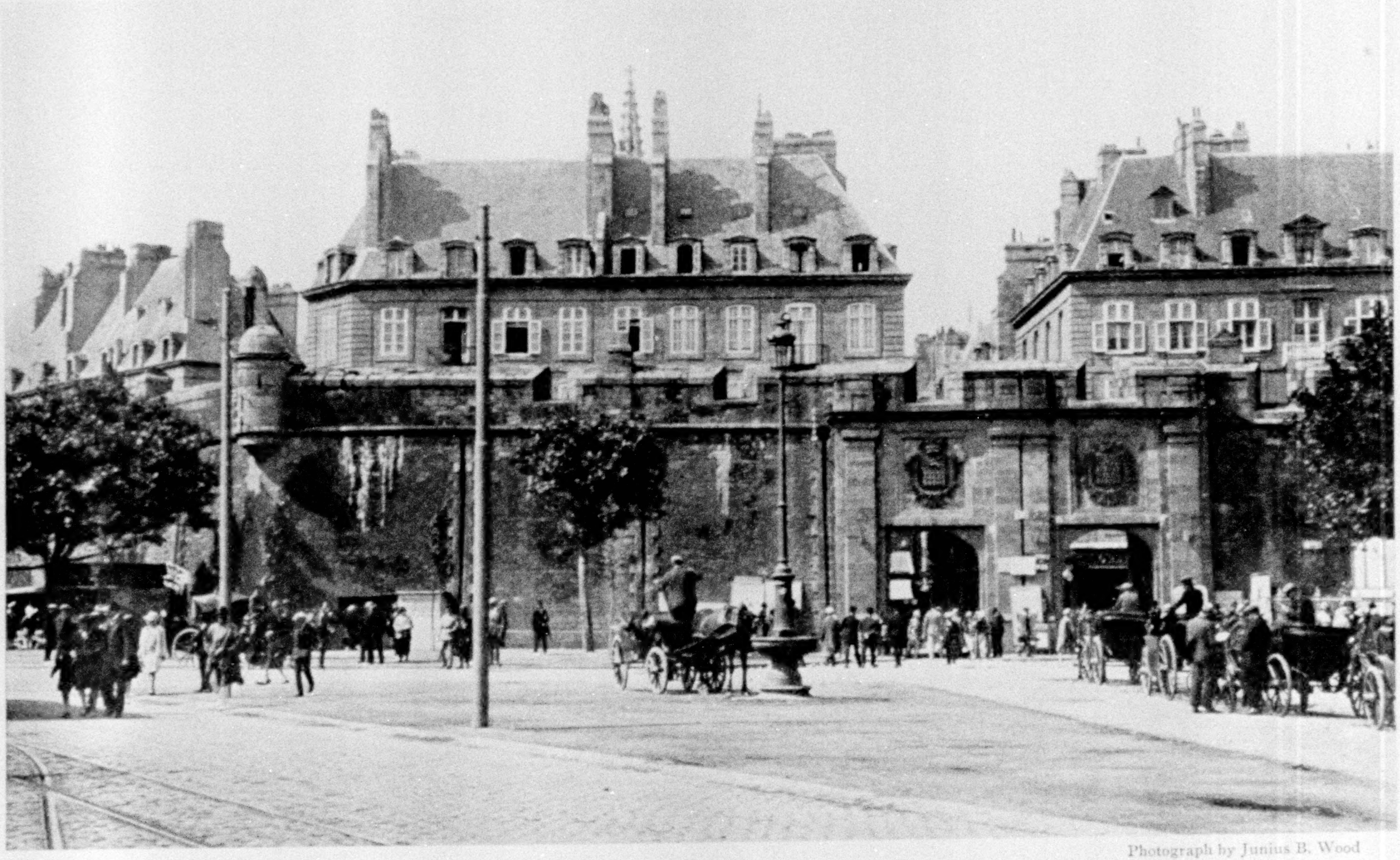
ST. MALO HAS DEFIED THE ROUGH SEAS OF CENTURIES

When the tide is in and a storm rages, the promenade leading cityward becomes an uncomfortable walk: but it is at such times that the town recovers most of the charm of its adventurous past.



A VIEW OF THE CITY FROM THE FORT DE LA CITÉ, AT ST. SERVAN

The corsairs of old could sit in safety in their homes on this fortified rock and laugh at the attempts of their irate victims to dislodge them (see text, page 166). Though the spire of St. Vincent's dominates the city, the building is not on the highest point. St. Aaron's Church, opened for service only once a year, has its foundation on a slightly higher level.



Photograph by Junius B. Wood

TRAFFIC ENTERS THROUGH ST. VINCENT'S GATE

One of the twin portals dates from the early 18th century; the other, carved with armorial bearings and a Breton motto, is modern. A rustic policeman stands inside to prevent automobiles from attempting to drive into the narrow, twisting streets (see text, page 151).

It is so straight and narrow that it might be mistaken for a hallway. In 1155, when St. Malo was comparatively young, 24 watchdogs were purchased in England to guard the corsairs' beach, and it was from these dogs that the street took its name.

In those days St. Malo did not have its inner harbor, where the tides are cheated by locks; its tidal harbor, where 300-ton steamers tie up to the pier and gradually settle down on dry land until the water returns to float them off, or the other works of granite which now make it a port. Tides were the same, and the wooden ships lolled on their sides on the beach while crews made merry within the walls.

Each night at 10, when the great bell rang the "cover fire," the dogs were unleashed on the beach as a menace to thieves and a warning to moist but honest sailors against overstaying shore leave.

When the rampart Bastion of Holland was built, in 1674, and trimmed with 24 guns overlooking the sea, to assist in the reception of William of Orange's Dutch fleet, the dogs were given a bombproof home inside the gate. The barred room remains to-day, a place of thrills for peeping children.

Legend relates that in 1770, when the canine guard had diminished to 12, a certain lieutenant who had tarried too late with his sweetheart in near-by St. Servan, one March night, was chased into the water and there devoured by the dogs.

Dupont (see text, page 165) produces a burial record to prove that this romantic tale is not historically accurate. Nevertheless the dog guard ceased to exist after that year.

A HOLY MAN OF WALES FOUNDED ST. MALO

The modern St. Malo was only three years old when the dogs were purchased, but the city was ancient even then. In the sixth century, a hermit named Aaron had a hut of stone on the rock opposite, where formerly had stood the Gallo-Roman city of Aleth, now St. Servan. One day a holy man called Malo, Maclow, Maclou, Machut, or Maclovius came over the waves from Wales in a homemade stone dugout. According to his memory, he had been born in 520. With the hermit Aaron as an audience, the visitor held religious services on the back of a complaisant whale. The taciturn Malouin has neither sagas nor script and may have confused his patron with Jonah. But no carping historian has proved the tale false.

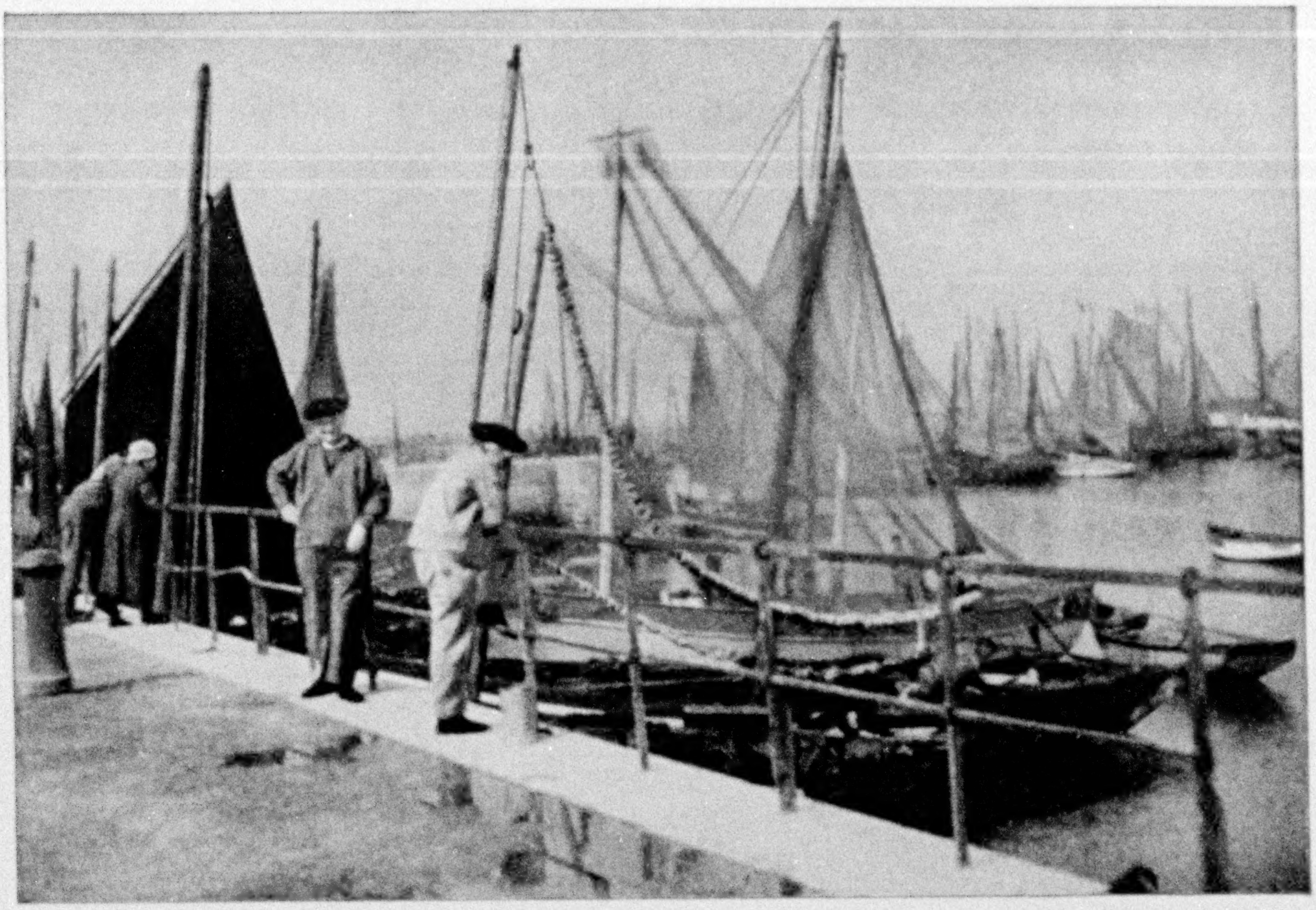
Malo from Wales built a hut of his own and started to perform miracles. He became a bishop in 590. Druid competition eventually chased him to the old province of Saintonge. By 680, however, he had been canonized, and his skull and an arm bone were brought back. Charlemagne's warriors destroyed church and city in 811, and Charlemagne restored them. Otherwise, early life in St. Malo was uneventful.

In 1098 was born Jean de Châtillon, better known to Malouins as Jean de la Grille, from the iron latticework put over his tomb to prevent pious souvenir hunters from carrying off his body piecemeal. He was the founder of the St. Malo that stands to-day. When he became bishop of Aleth, in 1144, most of his flock lived across the bay, on Aaron rock, the site of the present St. Malo. His predecessor had given the rock to the Benedictine monks, and it was only after eight years, during which Jean made four trips to Rome on foot, that the Pope ordered the Benedictines to return the rock.

WARLIKE BISHOP BUILT THE ST. MALO OF TO-DAY

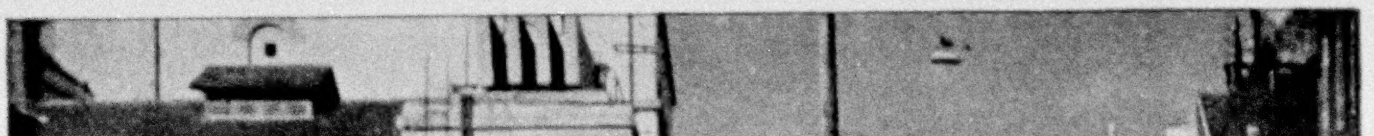
In 1155 he started the walls that still form the sea face of the ramparts. So well were they built that they withstood enemy cannon fire and the pound of angry waves throughout the centuries. Jean was both temporal and spiritual ruler. In his time immense establishments of the church and holy orders in the little city elbowed merchant corsairs' imposing storehouses and mansions with double floors and two-story cellars cut into the rock to hide sea booty from tax collectors. The Rue Jean de Châtillon of the present day leads past narrow stone stairways, dark passages, and vast caves that date from the time of the warlike bishop.

Belted by its ramparts, St. Malo had no room to grow. Its gray stone houses were built high and close, and cellars were deep. In 1700 it had 163 ships, with crews of 12,000 men—a figure equal to the population of the city, which is little larger even now.



ON SUNDAY DOUARNENEZ SHIPS ARE HOME FROM THE SEA—

With gossamer nets strung from the masts to dry, the fishing fleet drowses in the Sabbath peace of the harbor.



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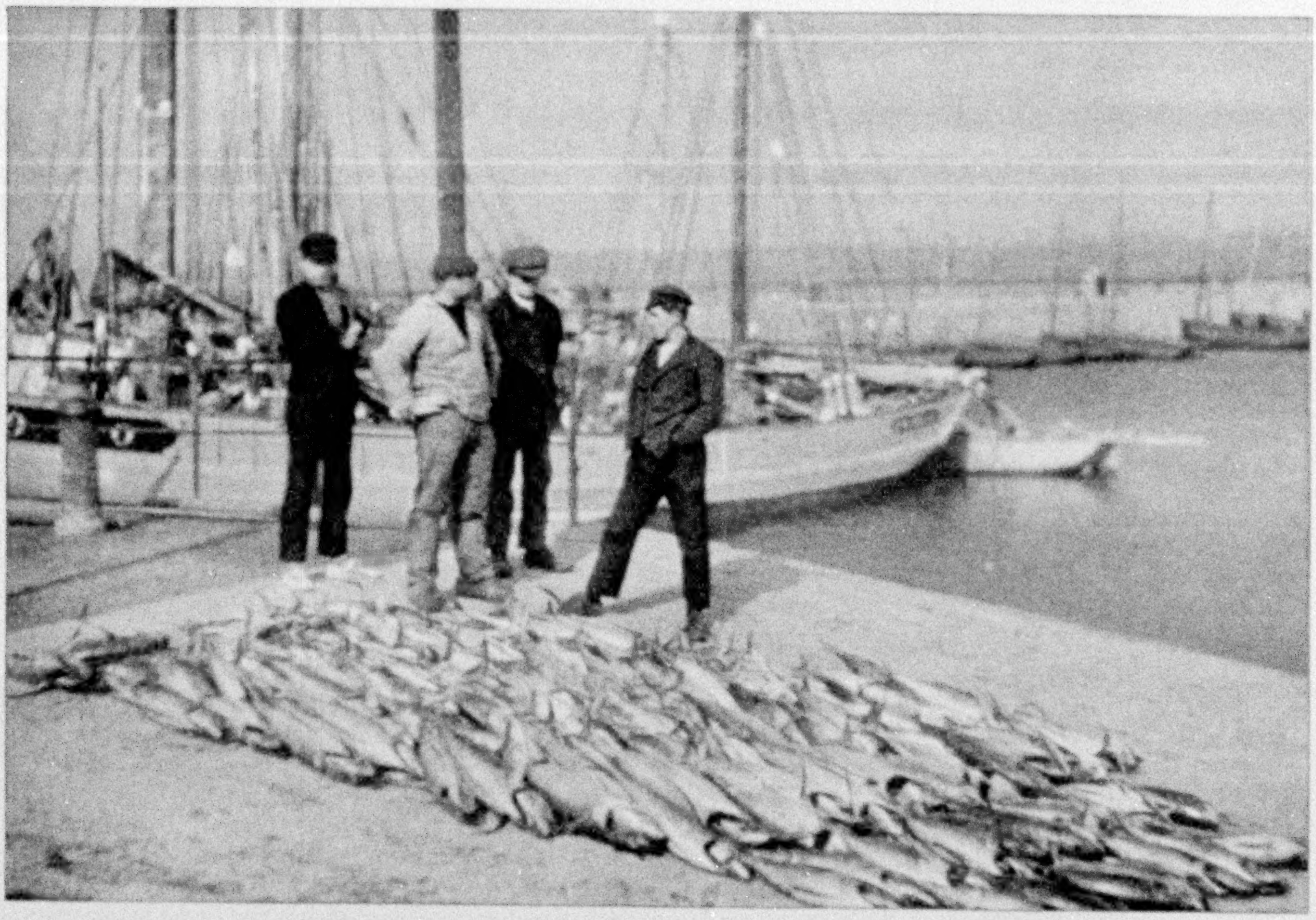
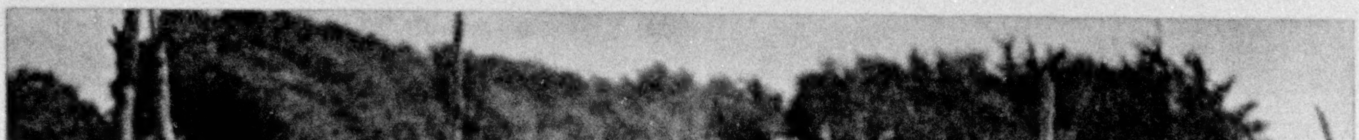
BUT MONDAY MORNING FINDS THE WATERFRONT ALL ASTIR

Knots of gaily clad fishermen discuss plans for the voyage while their fellows make the boats ready for the start.



TUNNY AND BONITO GLADDEN BRETON HEARTS

A catch like this means much to the men who wrest a precarious livelihood from the sea.



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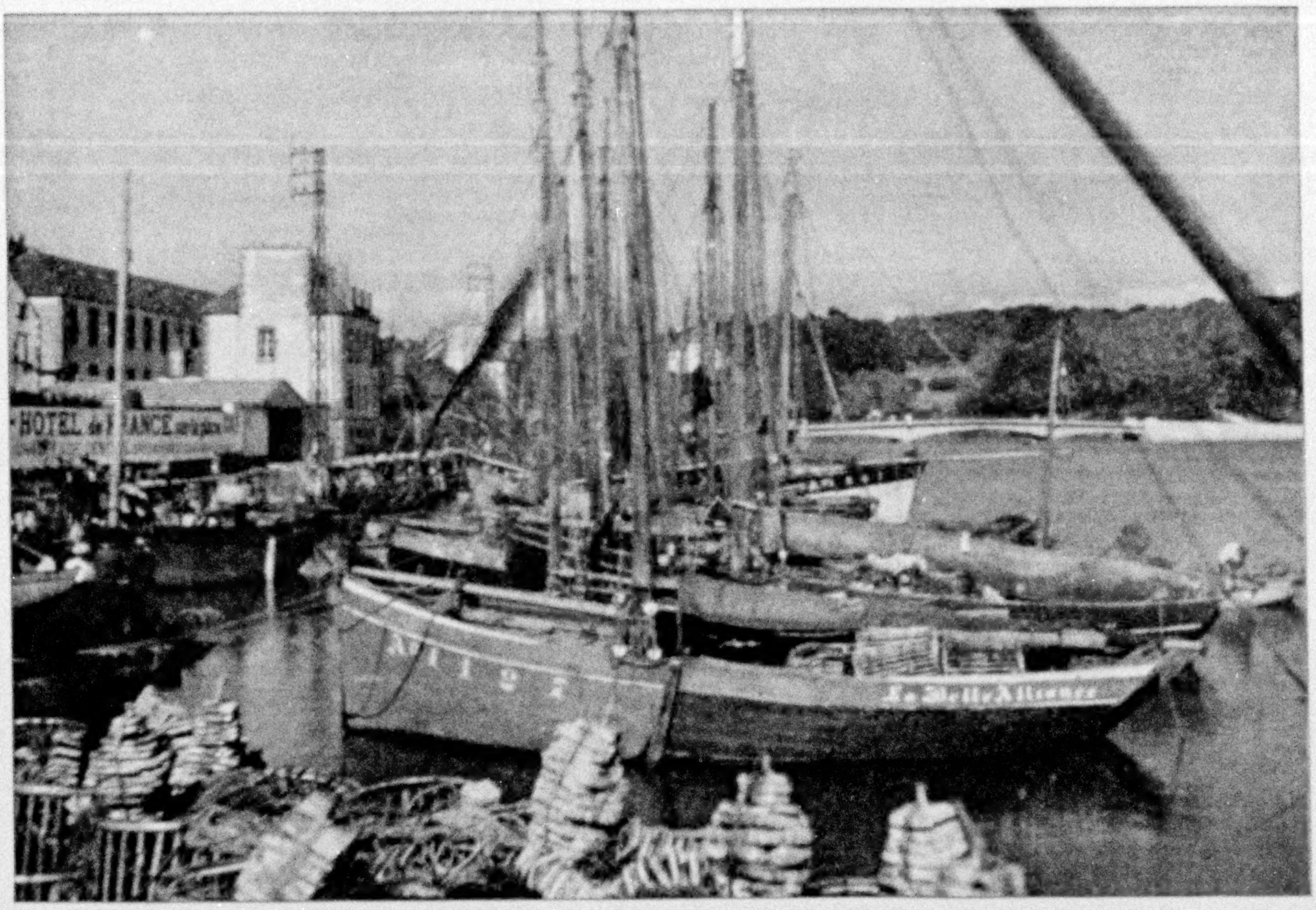
FISHERMEN'S WIVES REPAIR THE PRECIOUS NETS

In the sands at Loctudy these skillful women are working too busily to turn around for a photograph. Their stiffly starched bonnets are characteristic of the Pont-l'Abbé district.



FISHING GEAR LINES AUDIERNE QUAYS AT LOADING TIME

Equipment and bait are made ready along the harbor rim before being put aboard the boats.

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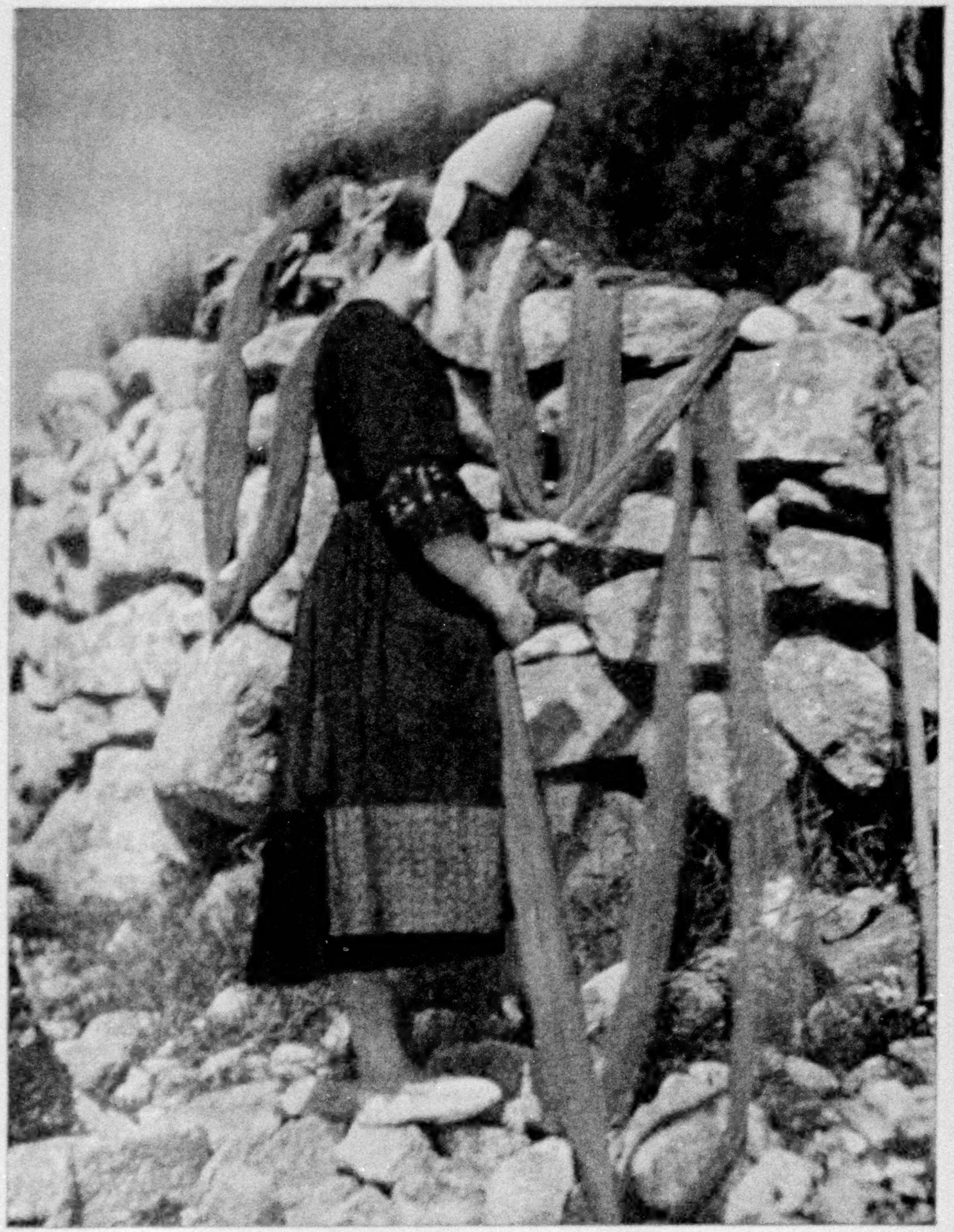
BOW NETS SPELL DOOM FOR THE WARY LOBSTER

These basket snares are ready to be carried by sailors to the staunch little vessels that venture from Audierne harbor to the Morocco coasts in search of crustaceans.



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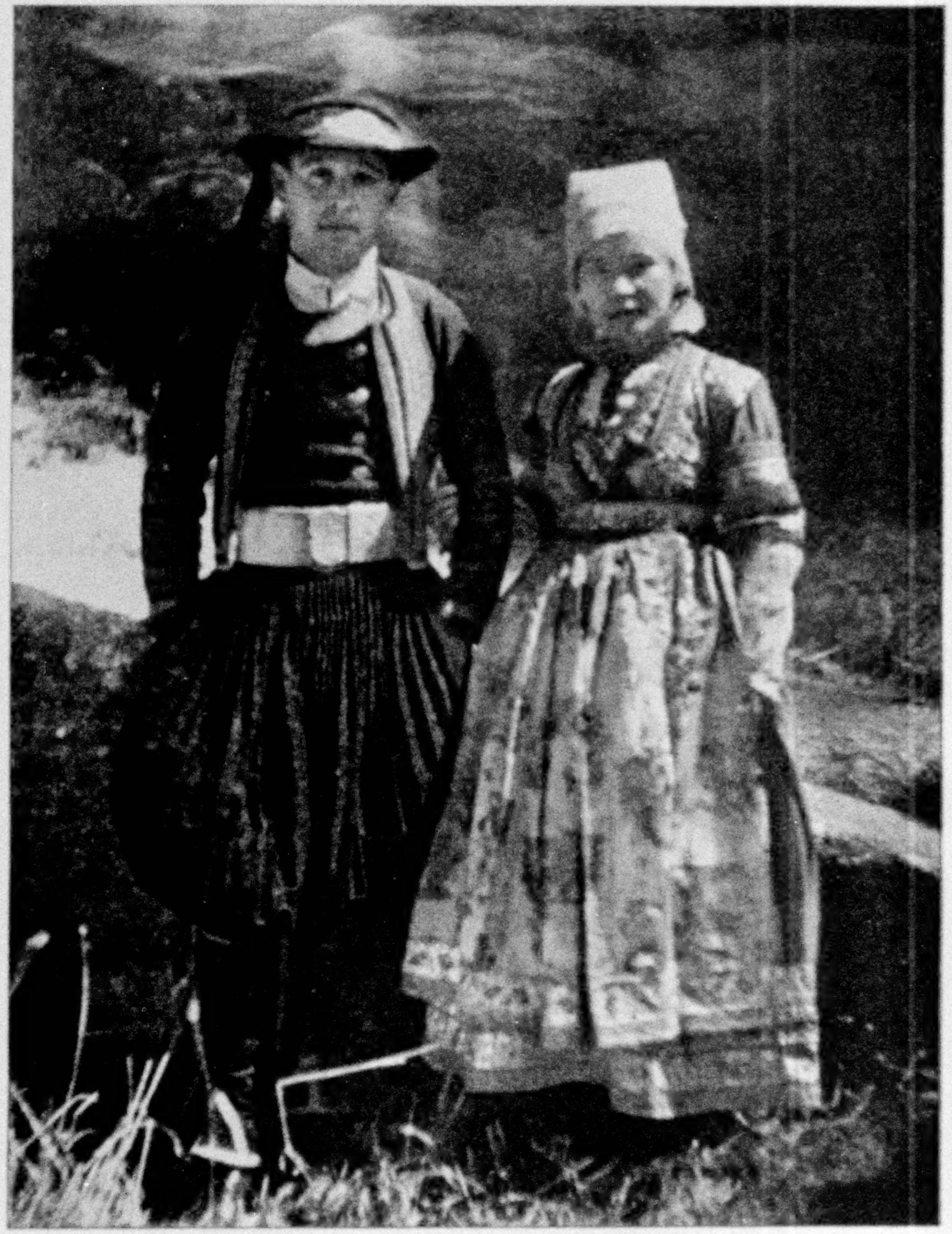
HER TASK REQUIRES DEFT FINGERS

Sardine nets—so costly that many fishermen can purchase only one in a lifetime—are often torn by porpoises. Here a woman is mending broken strands. Her cap, badge of her canton, is one of many distinctive types seen in Brittany.



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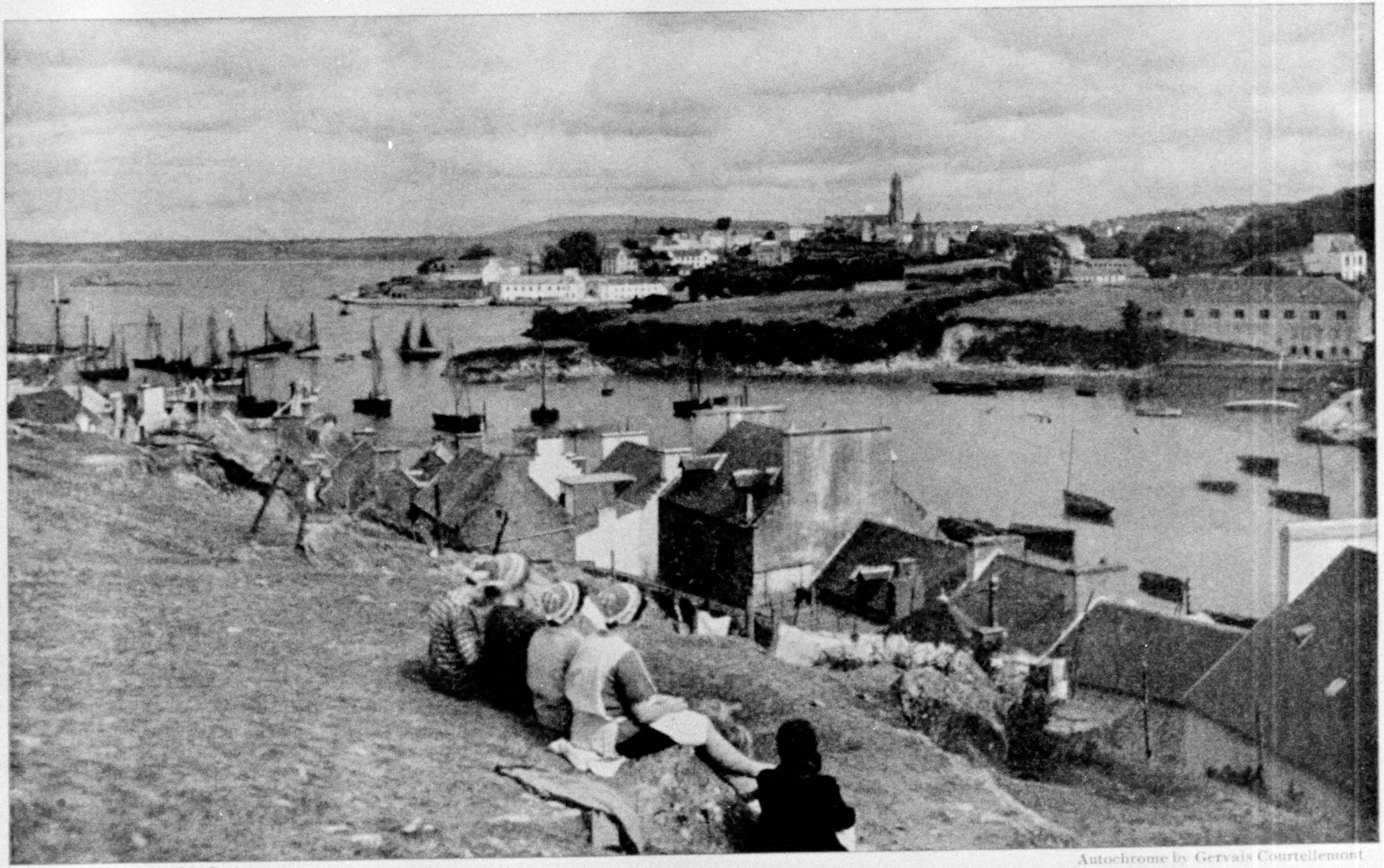
PEASANTS WEAR STRIKING OLD COSTUMES ON FÊTE DAYS

In the dress competition at Concarneau, city of comely folk, this couple's 1830 attire wins prizes. The young woman's apron is a treasured heirloom. And as for her companion's accordion-pleated trousers—such *Gallia braccata* amazed Cæsar!



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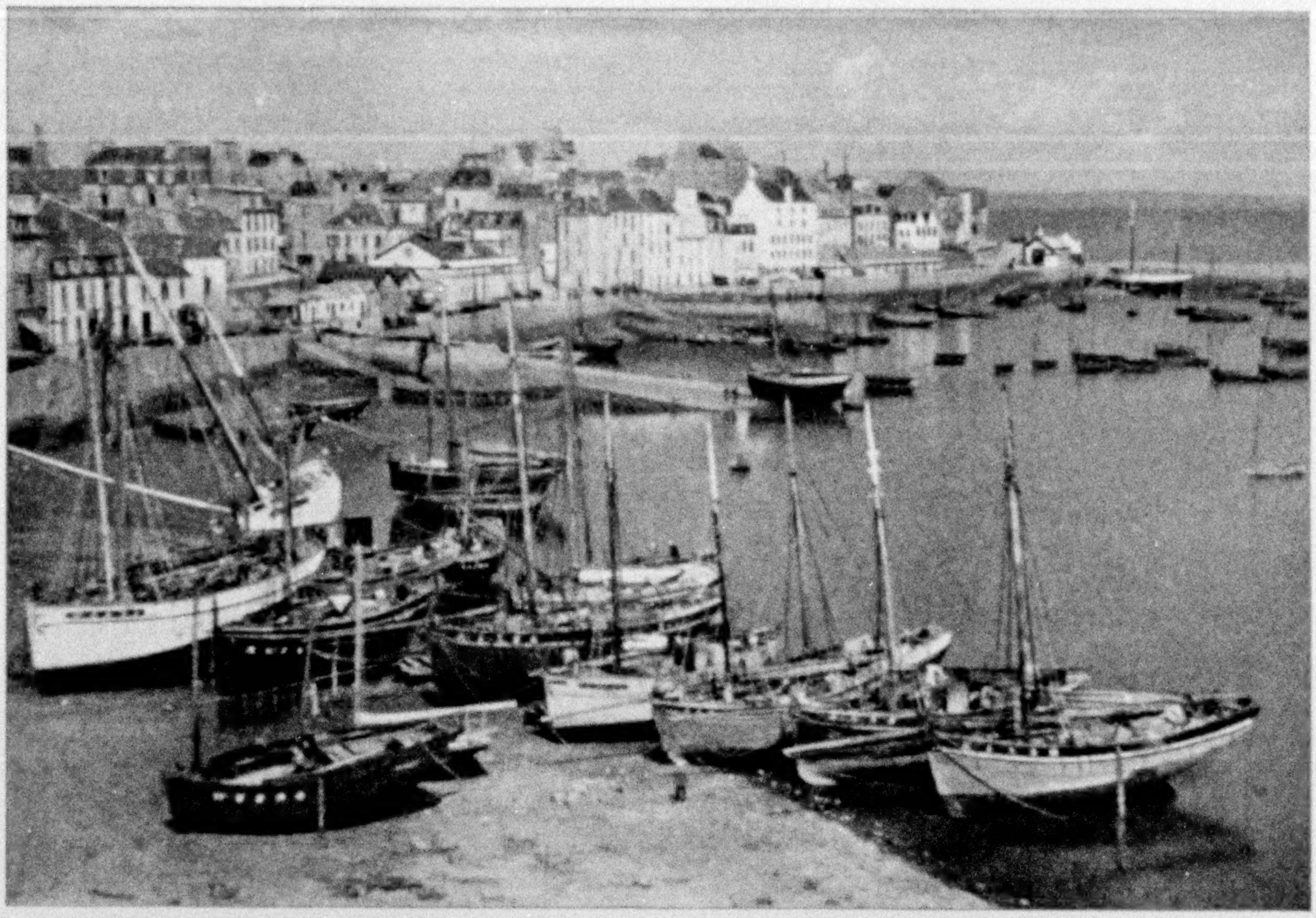
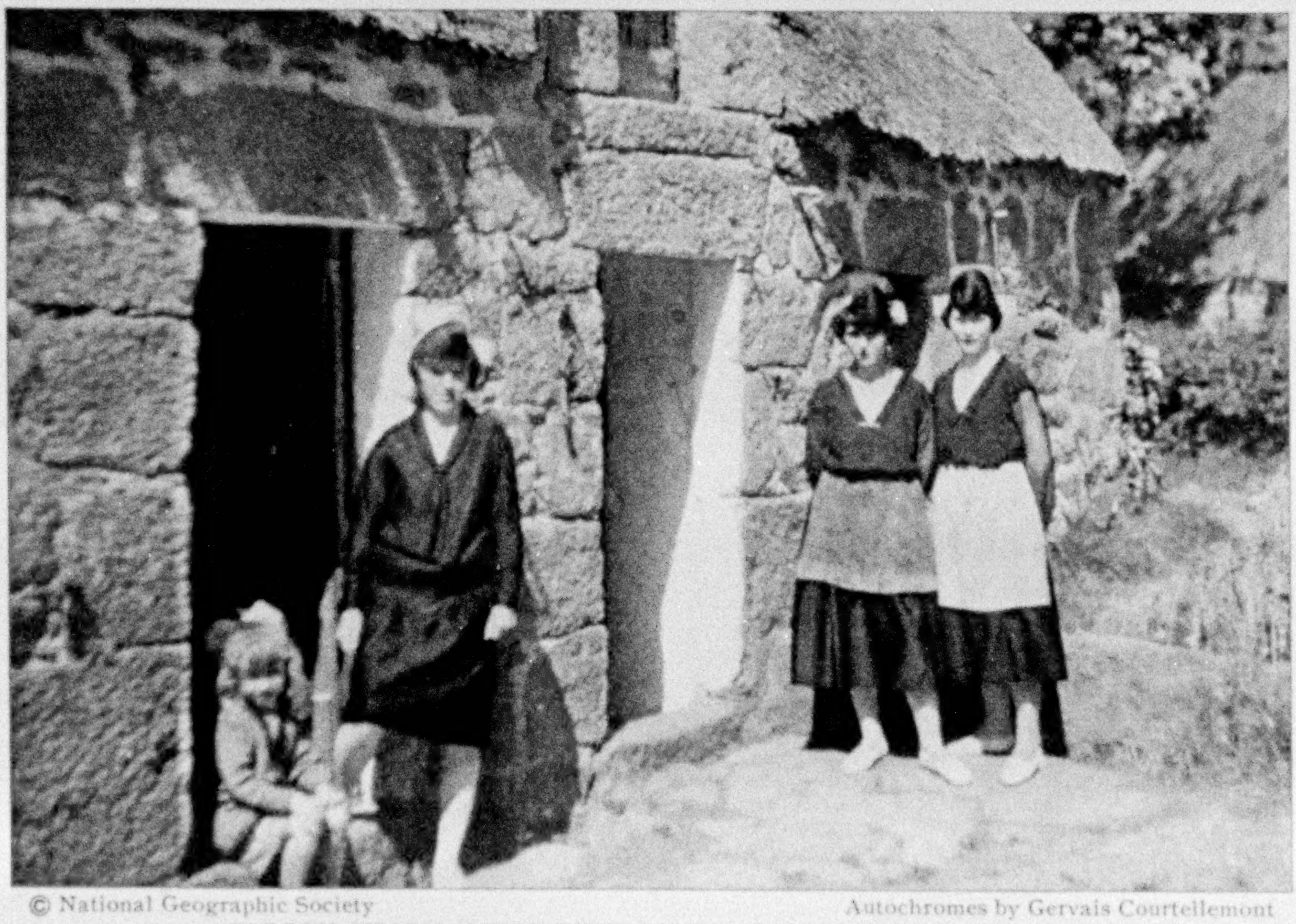
ON STILL DAYS IT IS PLEASANT TO LOOK TOWARD DOUARNENEZ FROM TRÉBOUL HILLS

When storms are raging, however, the wives and children of fishermen may stand here or on the quays of the town and wait in an agony of anxiety for ships that perhaps will never return to the quiet waters of the Little Harbor. Bretons live by the sea and learn to endure with fortitude its savage moods and rejoice when its humor is kind.



LOW TIDE LEAVES THE LOBSTER FLEET AGROUND

At Douarnenez the tide rises and falls more than 20 feet.



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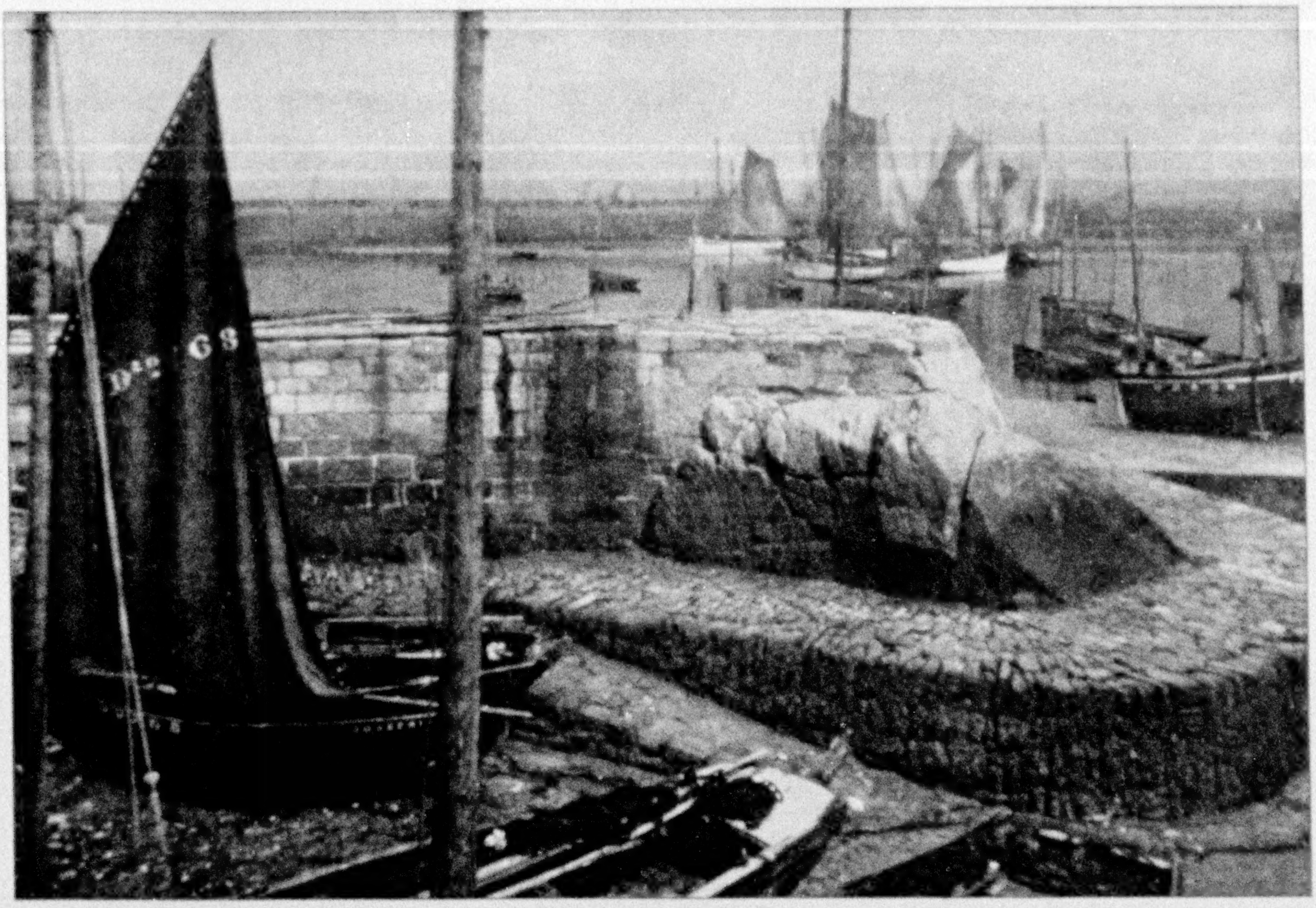
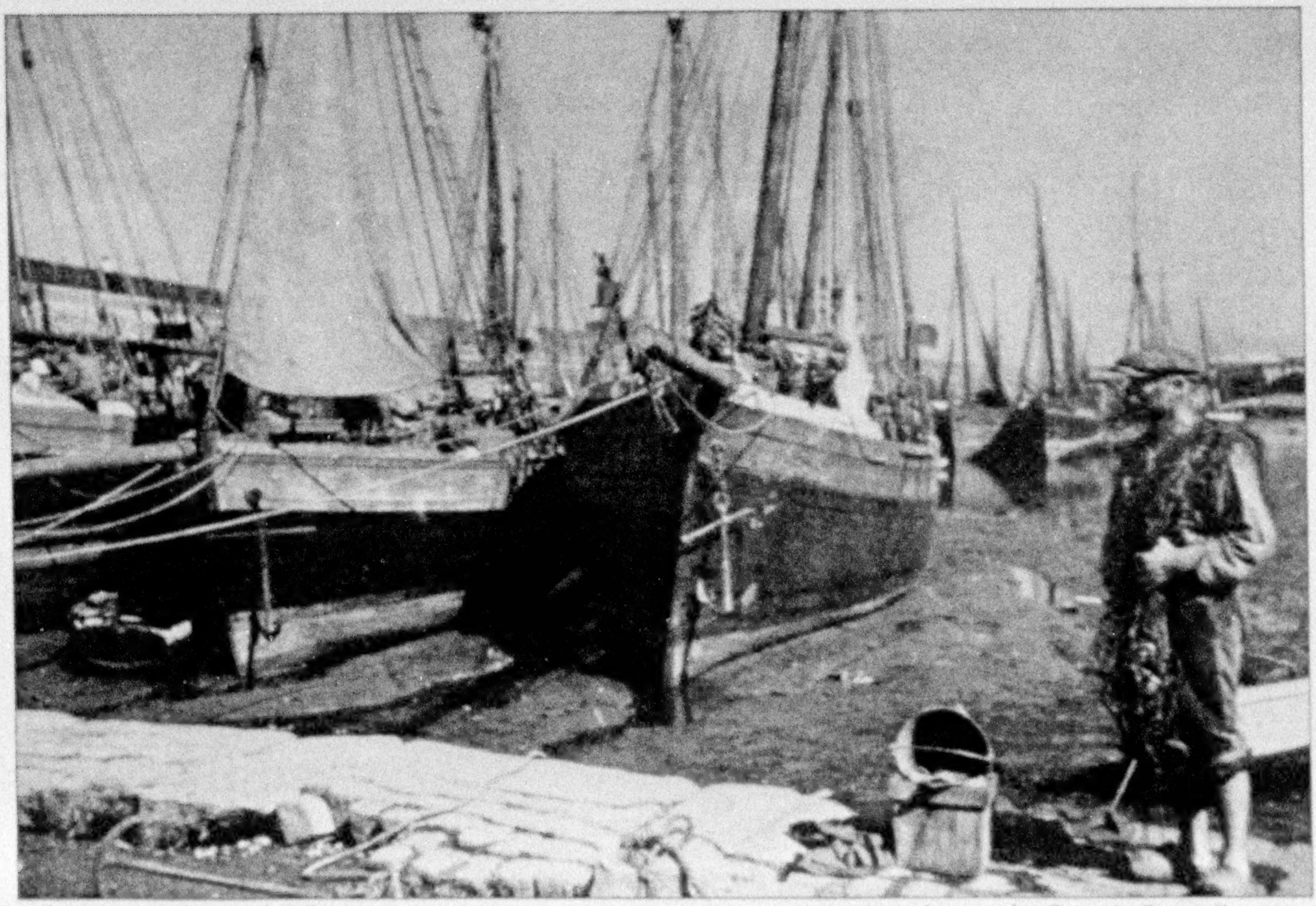
BRETON CHARM IS NOT DEPENDENT UPON QUAINT COSTUMES

Here old-style architecture is in contrast with the up-to-date attire of young factory girls who live in an ancient thatched cottage.



THE OLD PIER OF DOUARNENEZ LURES BUT BAFFLES ARTISTS

Painters of repute have despaired of putting the real tone of this scene on canvas.



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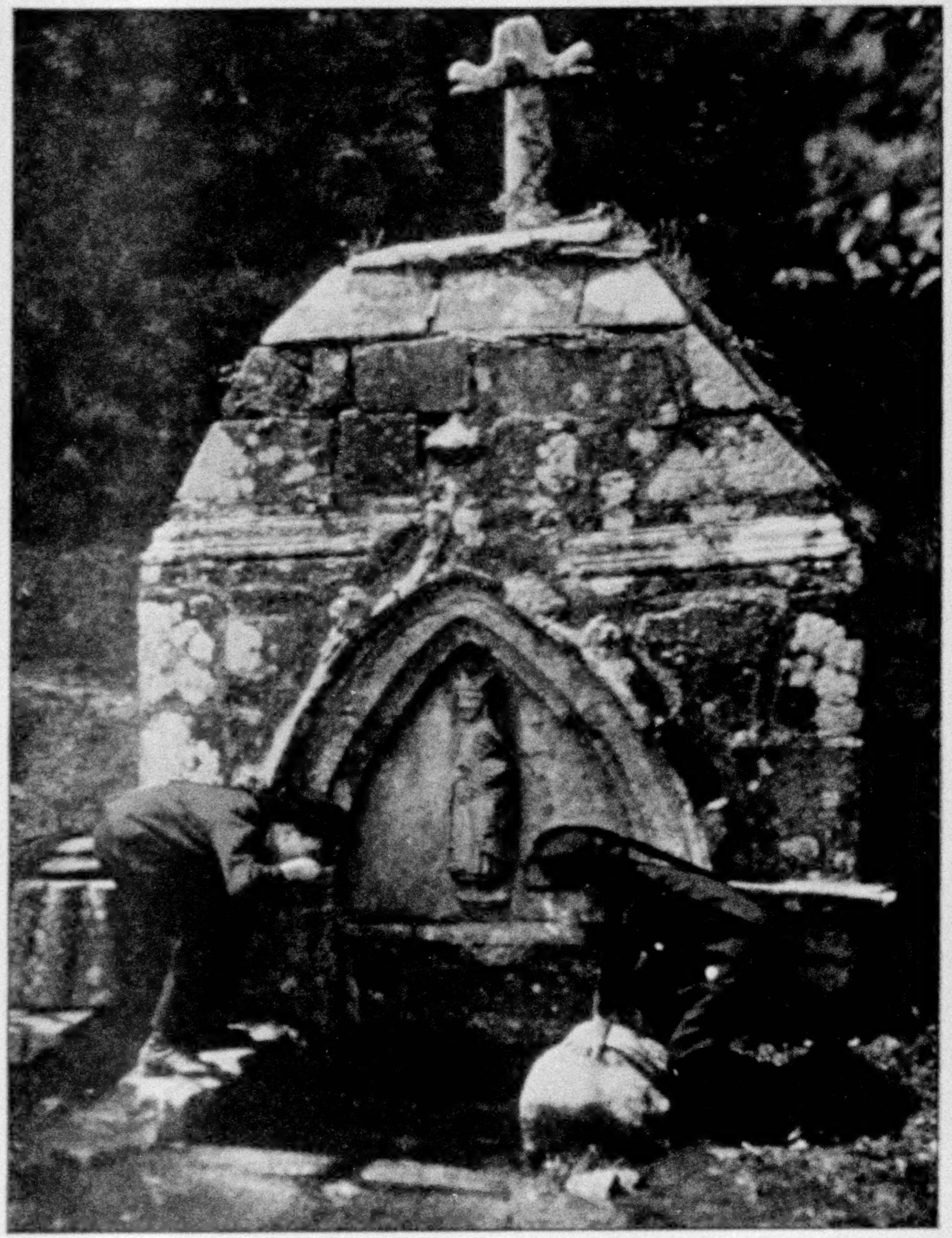
ROMANTIC ROSCOFF SHIPS CARRY CARGOES OF VEGETABLES

With the incoming tide these trim sailing vessels will be off for England laden with early fruit, potatoes, and other garden produce.



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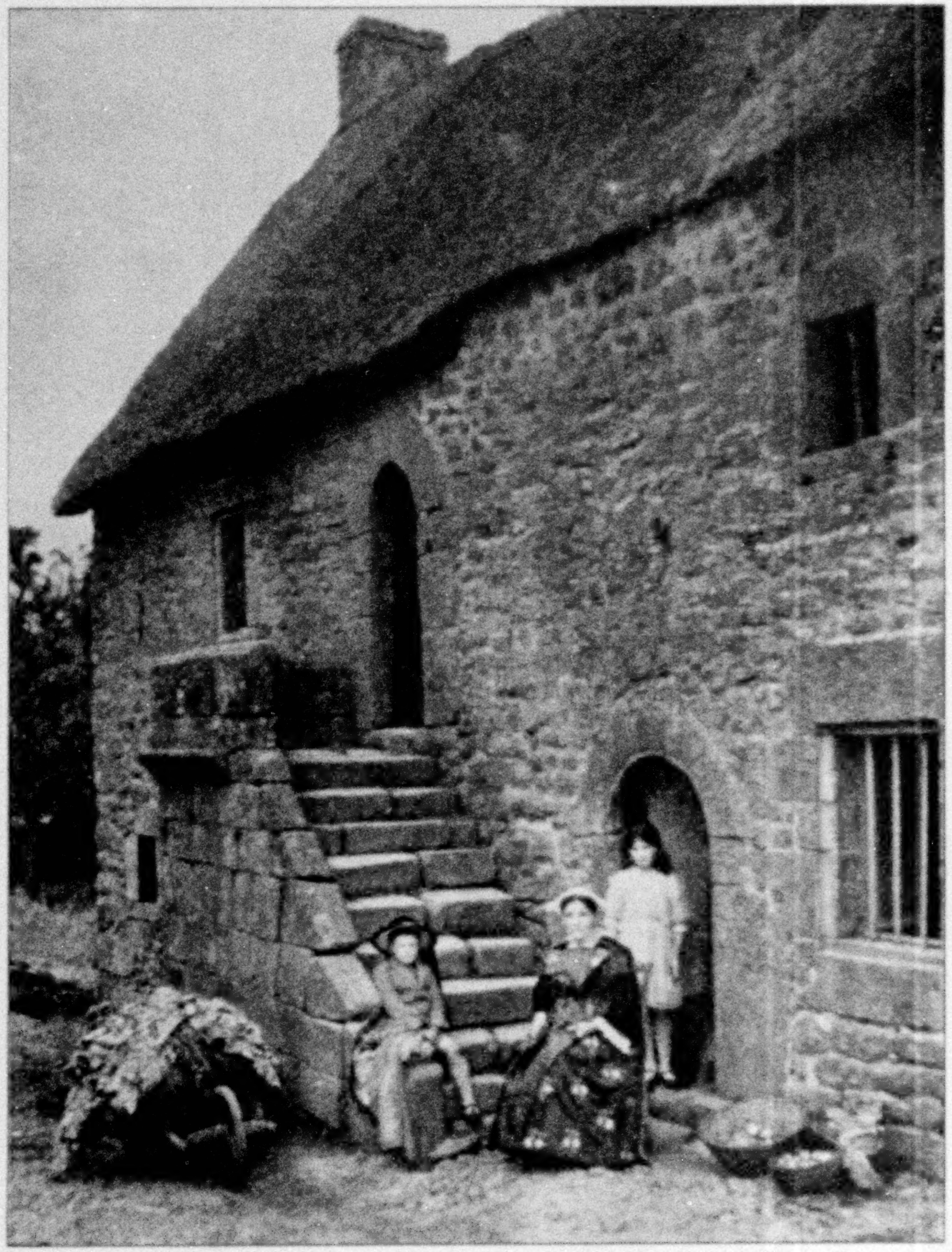
SWEET AND COOL IS THE WATER OF THE HOLY WELL

Breton boys, dressed in gala attire in honor of the Pardon of Plougastel, pause for a drink near the Chapel of Anne of the Fountain.



Autochromes by Gervais Courtellemont

AURAY WOMEN STILL FAVOR TRADITIONAL COSTUMES

Old Brittany remains unspoiled at this venerable thatch-roofed farmhouse at Kermarquer, though the children are in modern dress.

The voyages of St. Malo husbands were long. The population increased only 132 a year for 20 years.

To-day a rustic policeman stands inside St. Vincent's Gate, stopping automobilists from driving up the crowded main street and advising them to leave their cars outside the walls, as the little city can be crossed in a few steps (see page 141).

The old Street of the Jews, now Chateaubriand (see text, page 134), crosses the Street of the Sacred Beard and continues, hilly and narrow, as the Court of la Houssaye (from Potier de la Houssaye, who once owned all the buildings thereabout).

Here is the House of the White Horse, the oldest house of stone in St. Malo. On the side of the entrance to its octagonal stairway tower is painted the modest notice of a cabman, who may be seen in front of his door almost any morning, shampooing his horse. A sign in an upper window advertises "corsets made on measure or repairs." Specimens of home laundry hanging in other frames, muddy shoes drying on stone sills, pots of flowers, and milk bottles complete the 20th-century garniture of the historical mansion.

HEADSTRONG ANNE DEFIES THE MALOUINS

This once was the palace of the famous Duchess Anne, twice Queen of France, married to Charles VIII in 1491, and to his cousin, Louis XII, in 1499. Here the 14-year old duchess lived, defying temporal power of bishop, chapter, or city, until she left to become queen, bringing unsubmissive Brittany as her dowry to the crown. Here Catherine de' Medici lived in 1570, two years before she staged the massacre of St. Bartholomew. Thus the paths of two remarkable women crossed, one dead five years before the other was born. The old house of both stands unperturbed.

The headstrong Anne, charmer of kings, is credited with the Château which frowned down on the walls of the free city and stood as a bulwark against enemies who might come by land, and which to-day, with its moats, its quiet parks, and its towering walls half buried in the sand, is only a historic pile sheltering a museum, an exhibit of Breton needlework, and patient clerks collecting taxes and issuing *permits de séjour* to strangers who tarry in St. Malo (see pages 156, 158).

One day in 1424 a breathless boy informed the sovereign bishop that men were staking out a wall just outside the ramparts, on the spit of sand which at low tide connected the rocky island with the shore. Bishop William of Montfort led a procession of monks to the drawbridge of St. Thomas's Gate, threw a pebble over the ramparts as proof that the land was his, and forbade the work. Jean VI did not heed, but finished the Great Dungeon, which still towers above the city, to show that he was ruler in the Duchy of Brittany. His son, François II, built the walls, their embrasured tops then 118 feet above the ground, and had finished the sturdy Générale Tower in 1475. In 1501 daughter Anne completed the task.

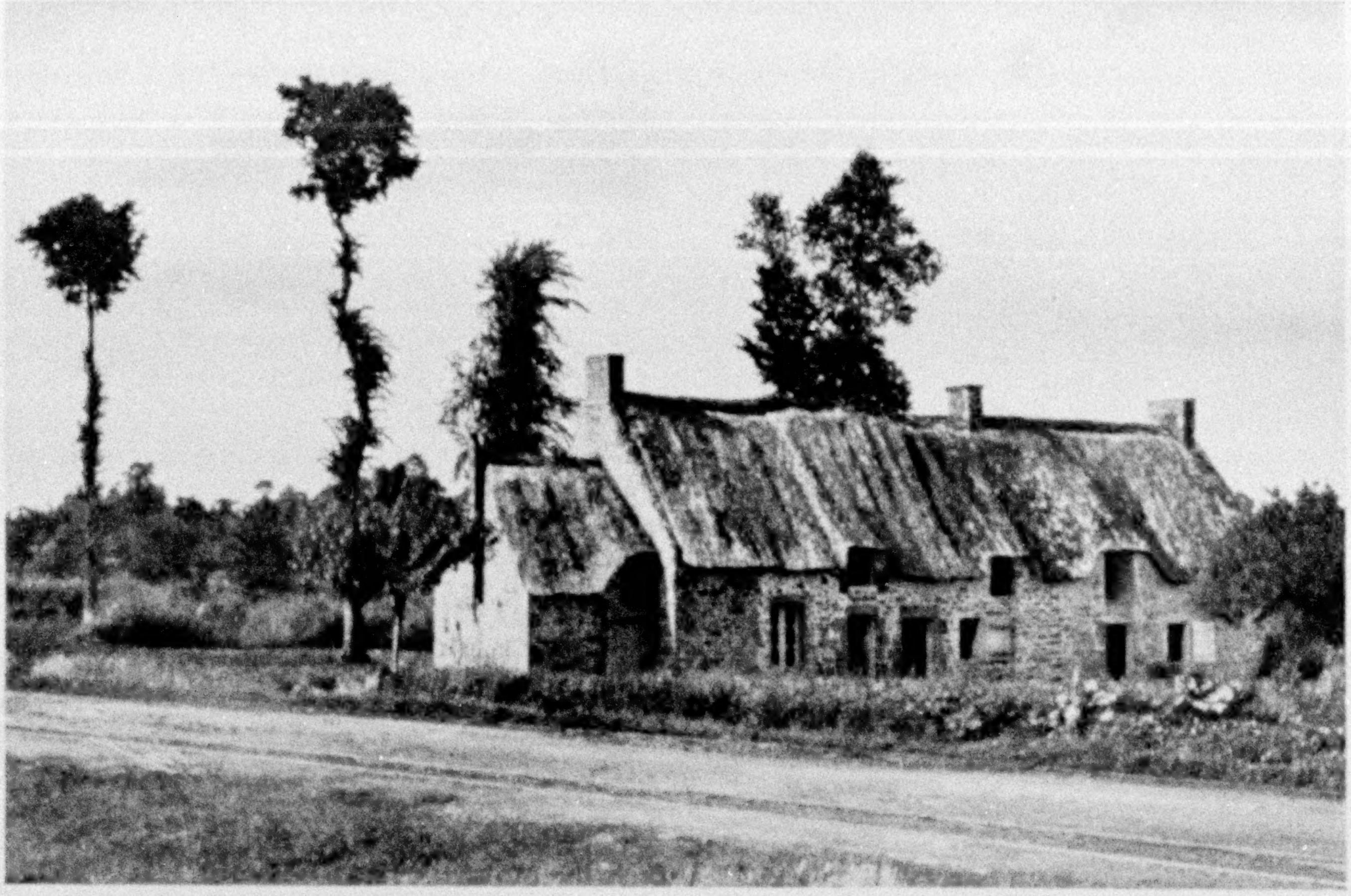
Once when the young queen came to inspect the construction of her defiance to the power of the bishop, chapter, or city, the citizens protested. *"Qui qu'en grogne, ainsi sera, c'est mon bon plaisir,"* she replied. "Though you grumble about it, it will be, for it is my pleasure" seemed such an apt reply that she had it carved on the bulky tower overlooking city and sea. It stayed until revolting citizens hacked it out with stones and hammers on November 15, 1792.

The Château was captured only twice, both times by the French: first in 1488, before it was completed, and again on the night of March 11, 1590, when 55 agile Malouins clambered up ropes dropped over the sides by traitors within.

The sea, with its immense tides, was always St. Malo's defense, but in 1488 La Trémoille left his cannon on the sand, covering them with oiled skins as the waters rose, and resuming the bombardment as soon as the tide ebbed, until city and Château surrendered.

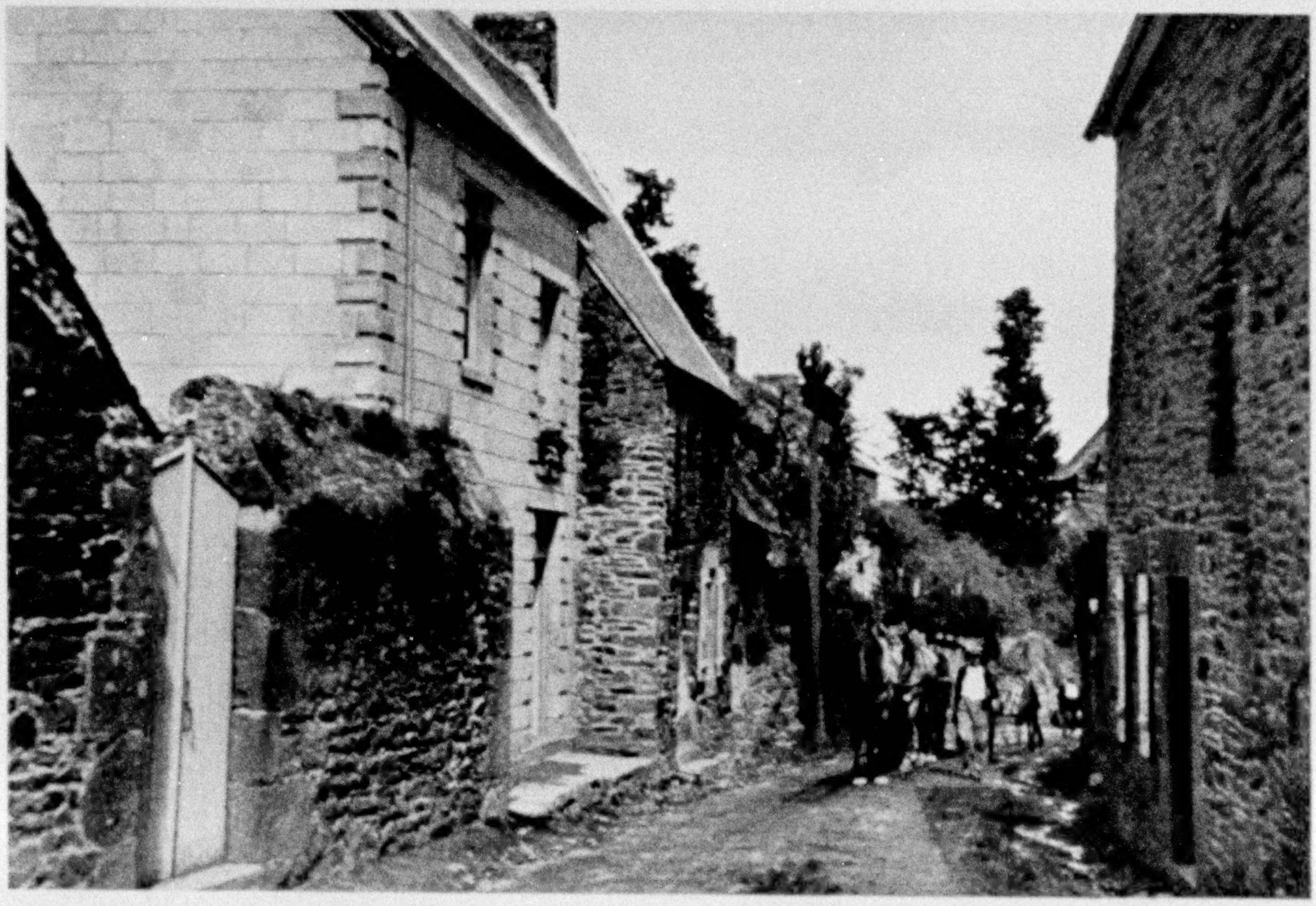
JACQUES CARTIER LINKS ST. MALO WITH CANADA

Whether Jacques Cartier was actually born in St. Malo, or that he was born in 1494, is not certain, but he was the first of that hardy city's great sailors, one of its three greatest. In the summer of 1534 François I started Cartier from St. Malo to find a northwest passage to the East. He had two ships of 60 tons each and Malouin crews totaling 122 men.



A BRETON HOME AT ST. JOUAN-DES-GUERETS

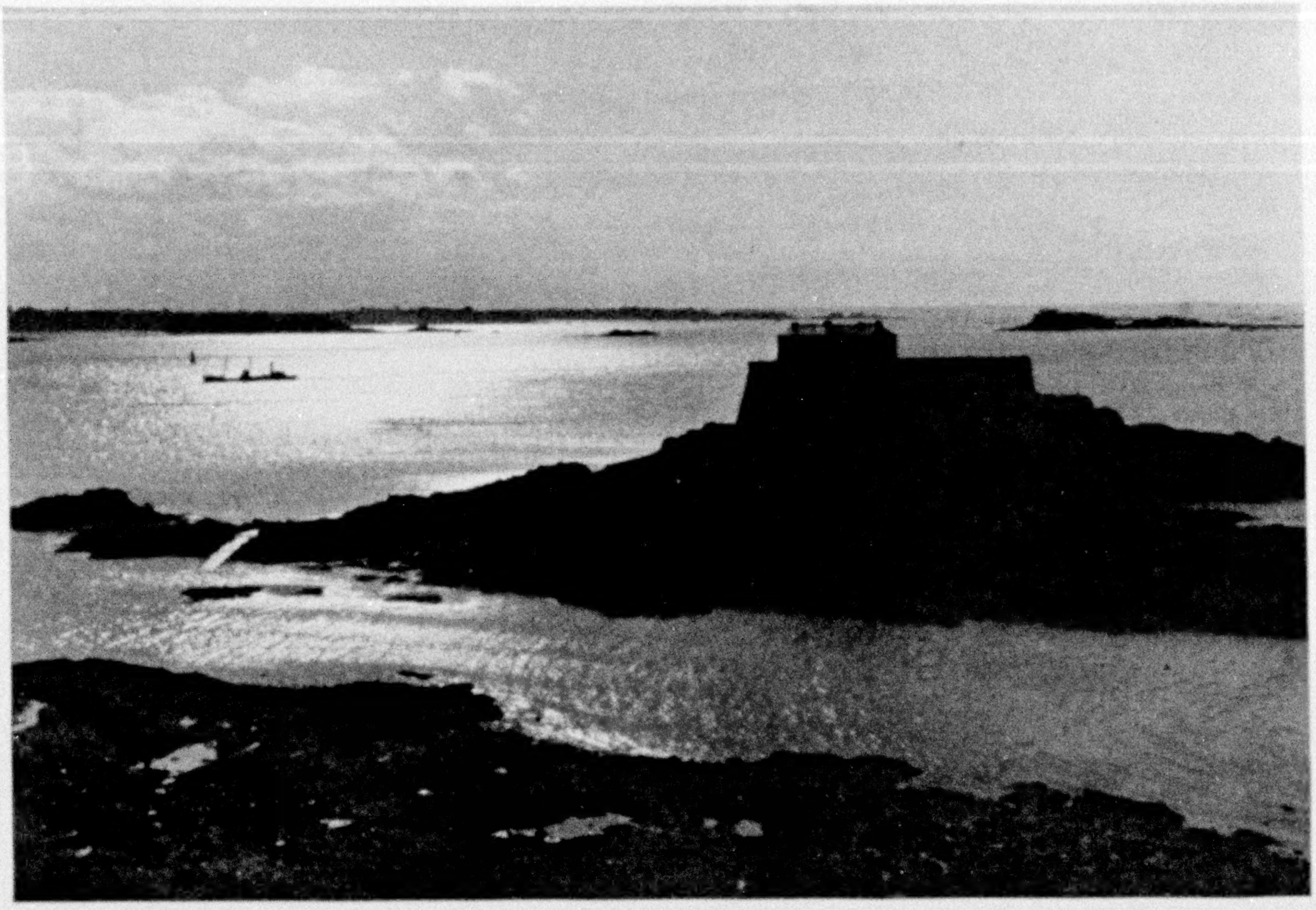
Low-hung eaves and thatched roofs add to the charm of such quaint buildings, unfortunately giving way rapidly to modern structures. The village near by is one of the most beautifully situated along the Rance.



Photographs by Junius B. Wood

ANCIENT BUILDINGS LINE THE NARROW STREETS OF ST. SULIAC

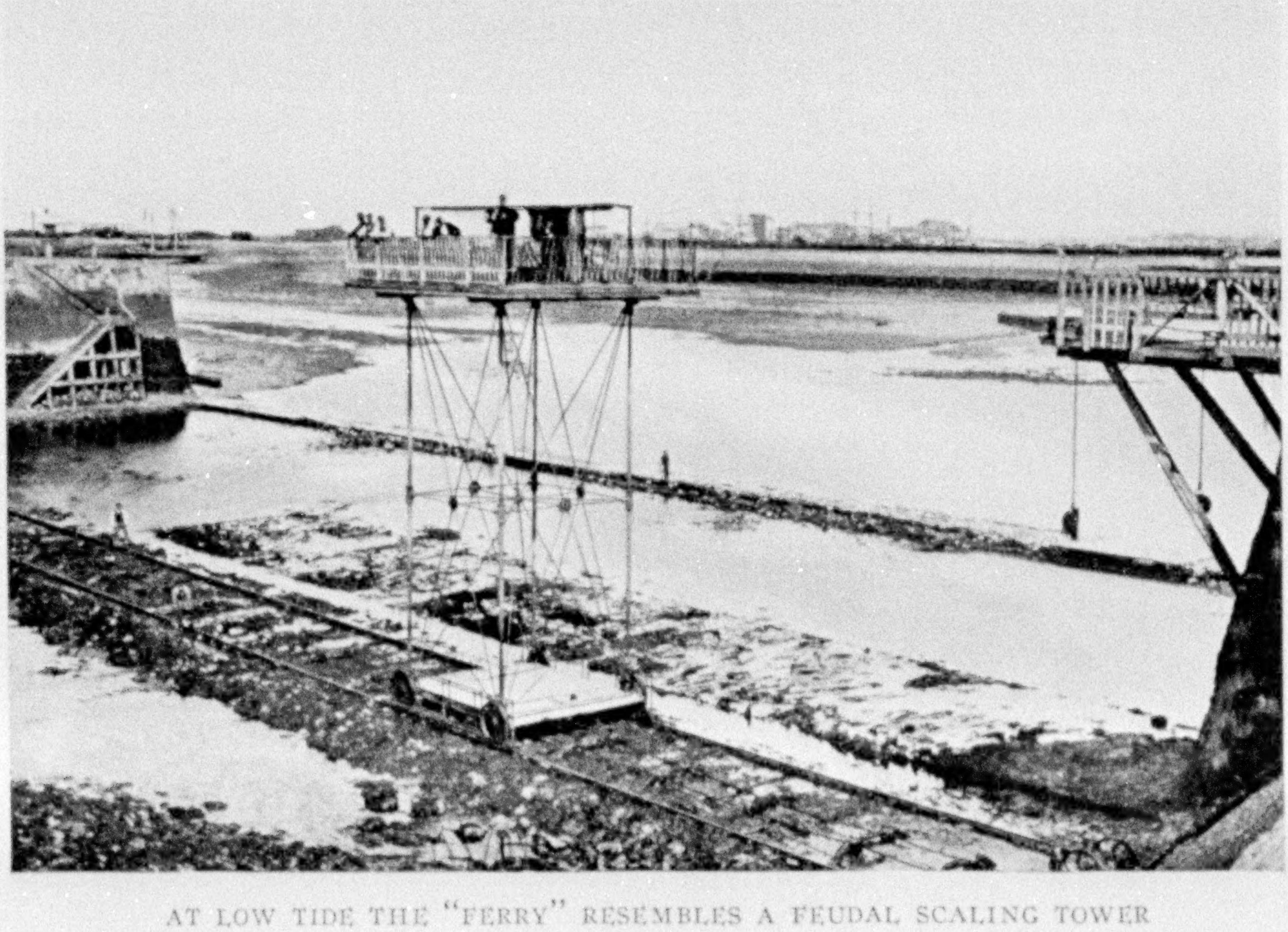
In sharp contrast to the modernized city of Dinard is this attractive old port town on the Rance, which has changed little since the days of the St. Malo corsairs (see, also, illustration, page 159).



Photograph by John W. McFarlane

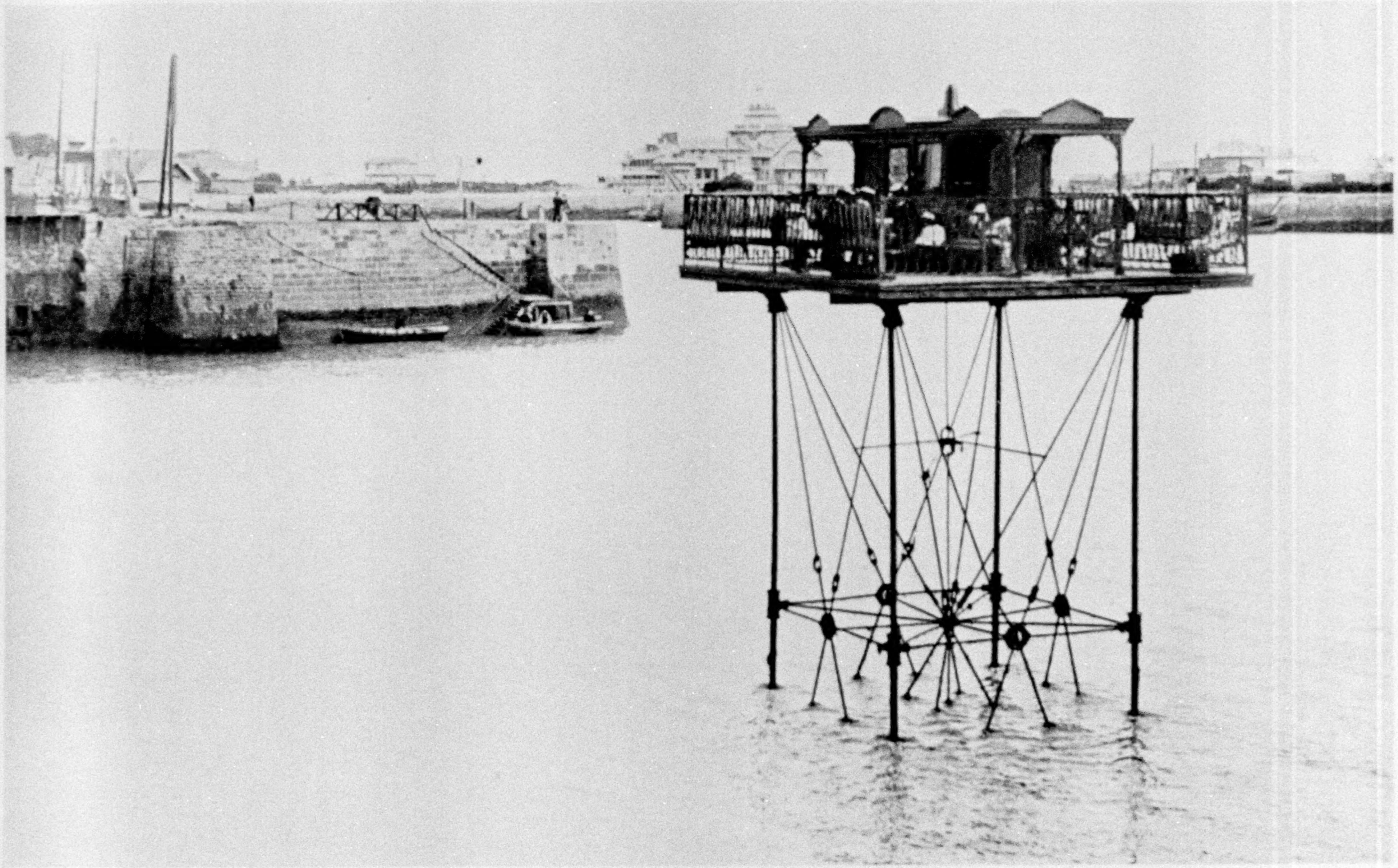
ST. MALO BAY: THROUGH THESE WATERS CARTIER SAILED TO CANADA

Stern and forbidding is the coastline of Brittany. The tide here rises more than 40 feet at certain seasons. For generations this region has been known as the "nursery of the French Navy."



AT LOW TIDE THE "FERRY" RESEMBLES A FEUDAL SCALING TOWER

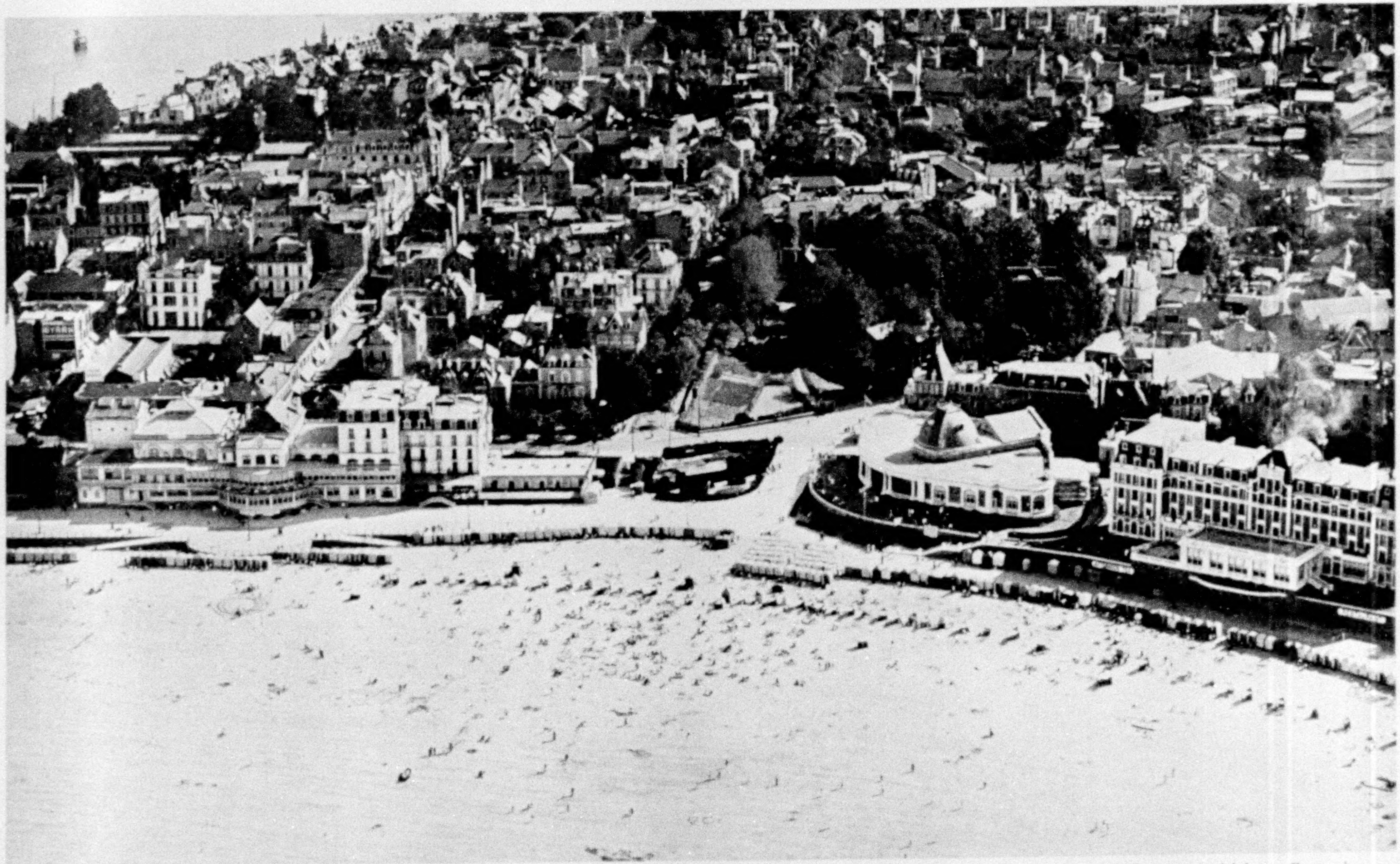
However, the passenger riding on this lofty platform to and from St. Servan feels safer when he can see the tracks than when he looks over the edge of the railed platform into 25 feet of churning water (see illustration, page 154).



Photograph by Ewing Galloway

THIS UNIQUE FERRY RUNS ON AN UNDERSEA TRACK

The derricklike structure connecting St. Malo and St. Servan, and known locally as the rolling bridge, is the invention of a Malouin engineer. When the tide is out, the rails and supporting truck are exposed, but at high tide they are 25 feet under water (see, also, illustration, page 153).



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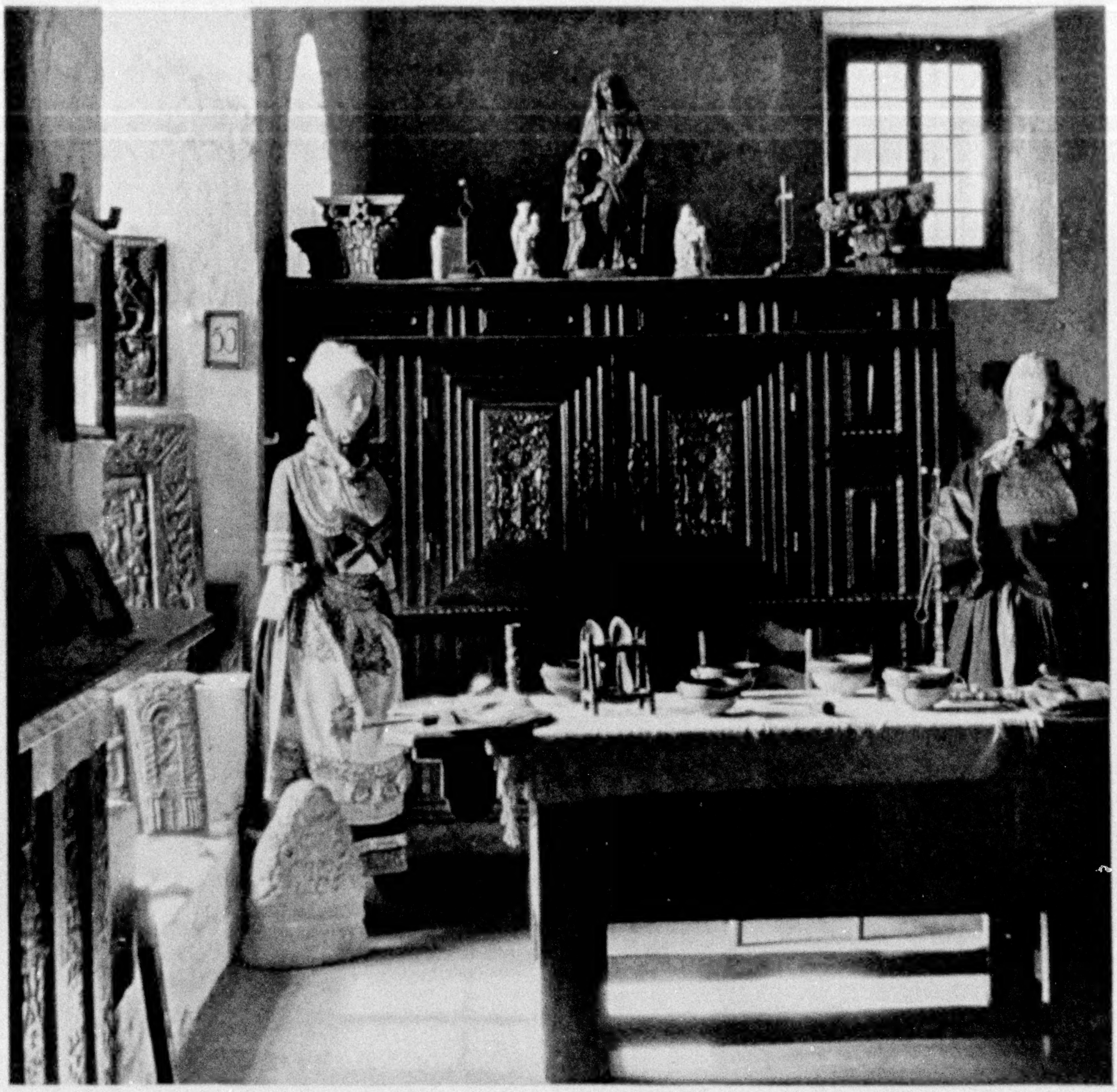
DINARD IS THE FASHIONABLE WATERING PLACE OF BRITTANY

Although this modern seaside resort across the Rance from St. Malo (see, also, illustration, page 157) lacks the charm of antiquity that distinguishes the City of Corsairs, it attracts thousands of English vacationists. Because of its equable climate, it is popular even in winter. Its beach, bathhouses, small and large casinos, and one of its leading hotels are shown in this aërial view.



Photograph by John W. McFarlane

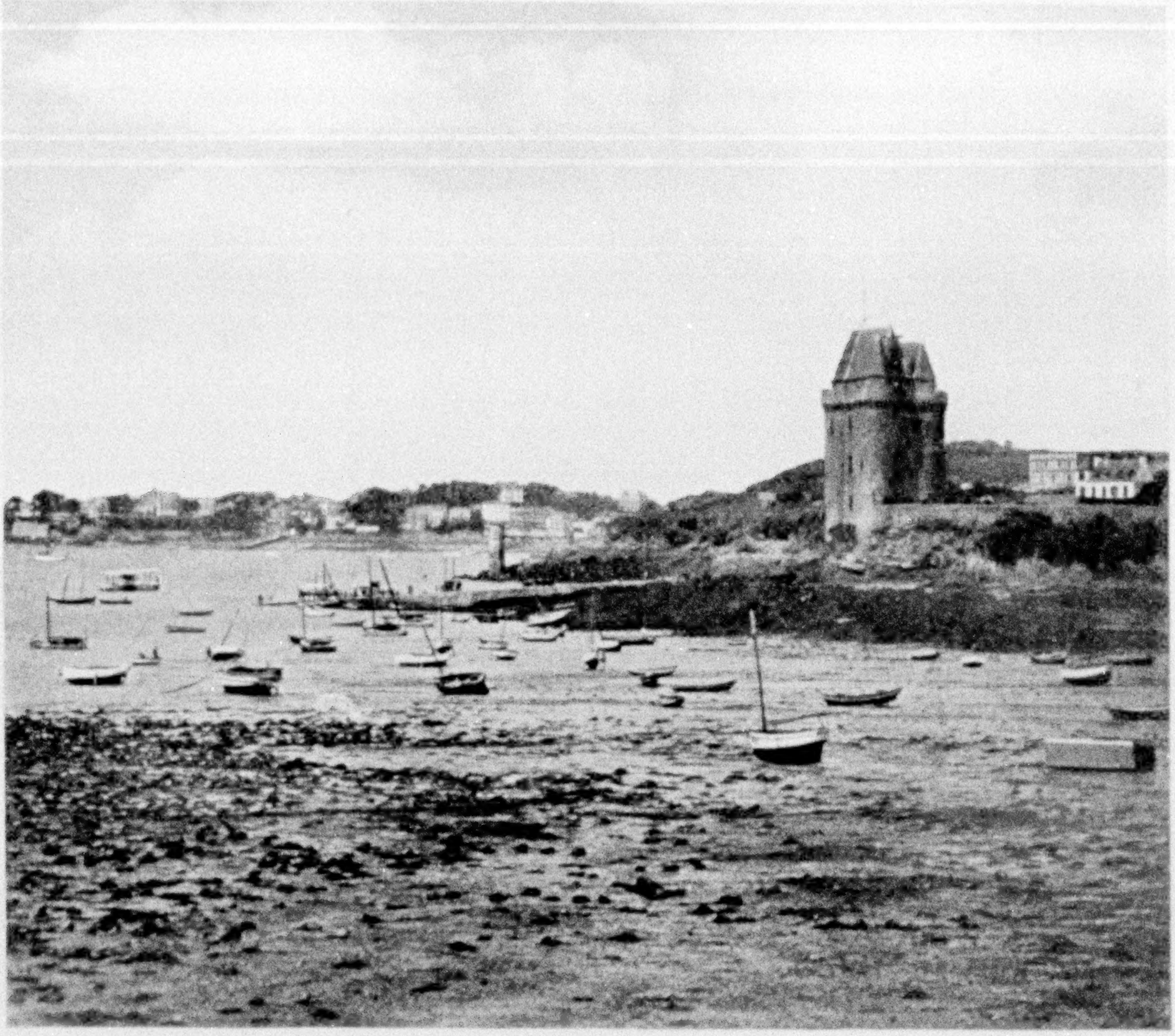
BRETON ART WORK AND COSTUMES ARE DISPLAYED IN THE CHÂTEAU

Anne of Brittany defied the clergy when she erected the great stronghold at St. Malo (see text, page 151). To-day the ancient building houses the city museum, a treasure house of priceless relics.

As the venturesome Malouins already were fishing on the Grand Banks, the handful of conquerors circled the whole Gulf of St. Lawrence. Cartier's report flattered the king, and soon the adventurer sailed with a larger expedition—the *Grande Hermine*, 120 tons; the *Petite Hermine*, 60 tons, and the *Émerillon*, 40 tons. He ascended the St. Lawrence; christened Mont Royal, where Montreal was founded in 1642; claimed all Canada for France, and abandoned the *Petite Hermine*. Weather-beaten fragments of the ship have been sent by Montreal to St. Malo's municipal museum. His third expedition was in 1541, 67 years before Champlain founded Quebec and more than 100 years before other French explorers and priests carried the Fleur-de-Lis down the Mississippi.

DUGUAY-TROUIN, FIRST OF THE GREAT ST. MALO CORSAIRS

St. Malo's only memento of Cartier, aside from the street signs, is a bronze statue erected in 1905 on the Bastion of Holland. In seafaring togs the explorer leans on a rudder and gazes across the waters toward that distant land which France could not keep.



Photograph by Junius B. Wood

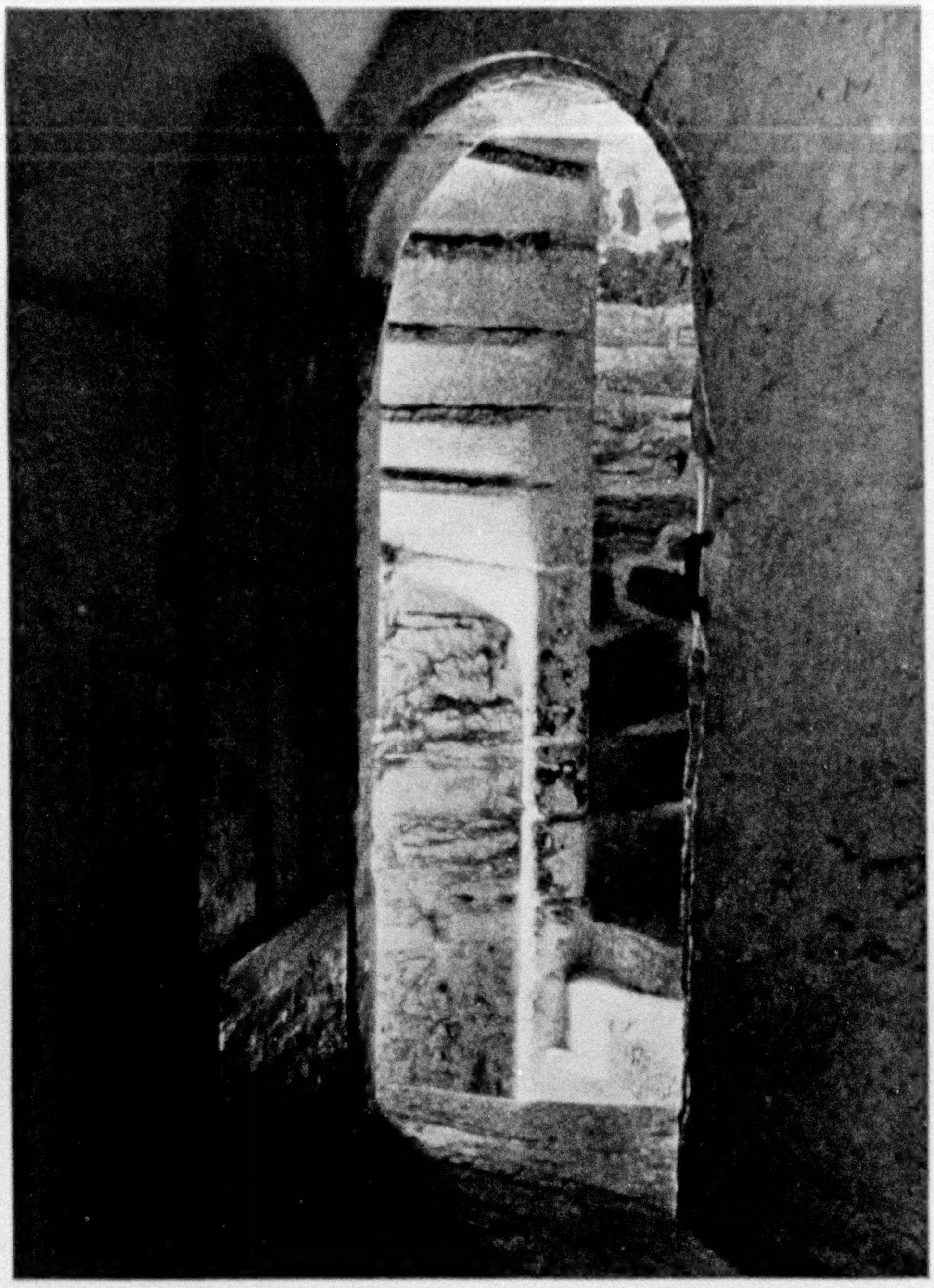
FOR FIVE AND A HALF CENTURIES THE SOLIDOR TOWER HAS GUARDED THE RANCE

Despite restorations, the grim stronghold built in 1382 by Duke Jean IV at St. Servan remains a good example of feudal architecture, with its three castellated and loopholed towers joined in triangular form. Its interior, noteworthy for chimney pieces and embrasures, was used as a prison in the Revolutionary and Napoleonic wars. From the small Port-St.-Père, at its foot, motor launches ply regularly to Dinard, across the river mouth at the left, and to La Vicomté (see, also, text, page 175).

The four-story frame house, with its eaves and trimming of slate, between the big windows of many little square frames, each floor projecting farther over the street than the one below, where René Duguay-Trouin was born, June 10, 1673, now shelters a curio store. Families still live in the upper stories and a sign commemorates the former tenant. The building is one of two so marked in St. Malo.

Duguay was educated for the church, but, like a true Malouin, answered the call of the sea. At 18 he was a captain of corsairs. The family came from the village of Gué, and in Breton style he added the title du Gué, which later became Dugué, and eventually Duguay. In 1709, after he had brought twenty warships and 300 merchantmen to France as privateering prizes, the king gave him a real title.

His most famous expedition, which returned 92 per cent profit to the St. Malo merchants who outfitted it, captured Rio de Janeiro on September 22, 1711. Part of that booty was the great bell, Noguette, which for nearly a century sounded the curfew from the clock tower of the Great Gate. The Revolution leveled the belfry for "love of equality," silenced the bell, broke St. Christopher's nose, and tossed the Sacred Virgin into the moat. The Virgin is again in her windowed shrine above the gate, looking up a little street



Photograph by John W. McFarlane

THE CHÂTEAU STAIRS RECALL DEEDS OF DERRING DO

In the days of Anne of Brittany these stone treads rang to the tramp of steel-clad warriors (see text, page 151). Now they serve merely to make visitors to the St. Malo Museum puff, for the defiant queen's stronghold has become a repository for relics (see, also, illustration, page 156).

to the cathedral spire on the hill where the bell, twice recast and rejuvenated, now hangs.

A square is named after the first of the corsairs. During the Commune a statue personifying Liberty, a hybrid of religious statues from nationalized shrines and altars, stood there. One of Duguay-Trouin took its place in 1822. Another change and the corsair gave place to a gray stone shaft in honor of *Les Enfants de St. Malo,* who fell in the World War. Duguay-Trouin's statue now stands across the street in front of the City Hall, buffeted as was its subject through life.

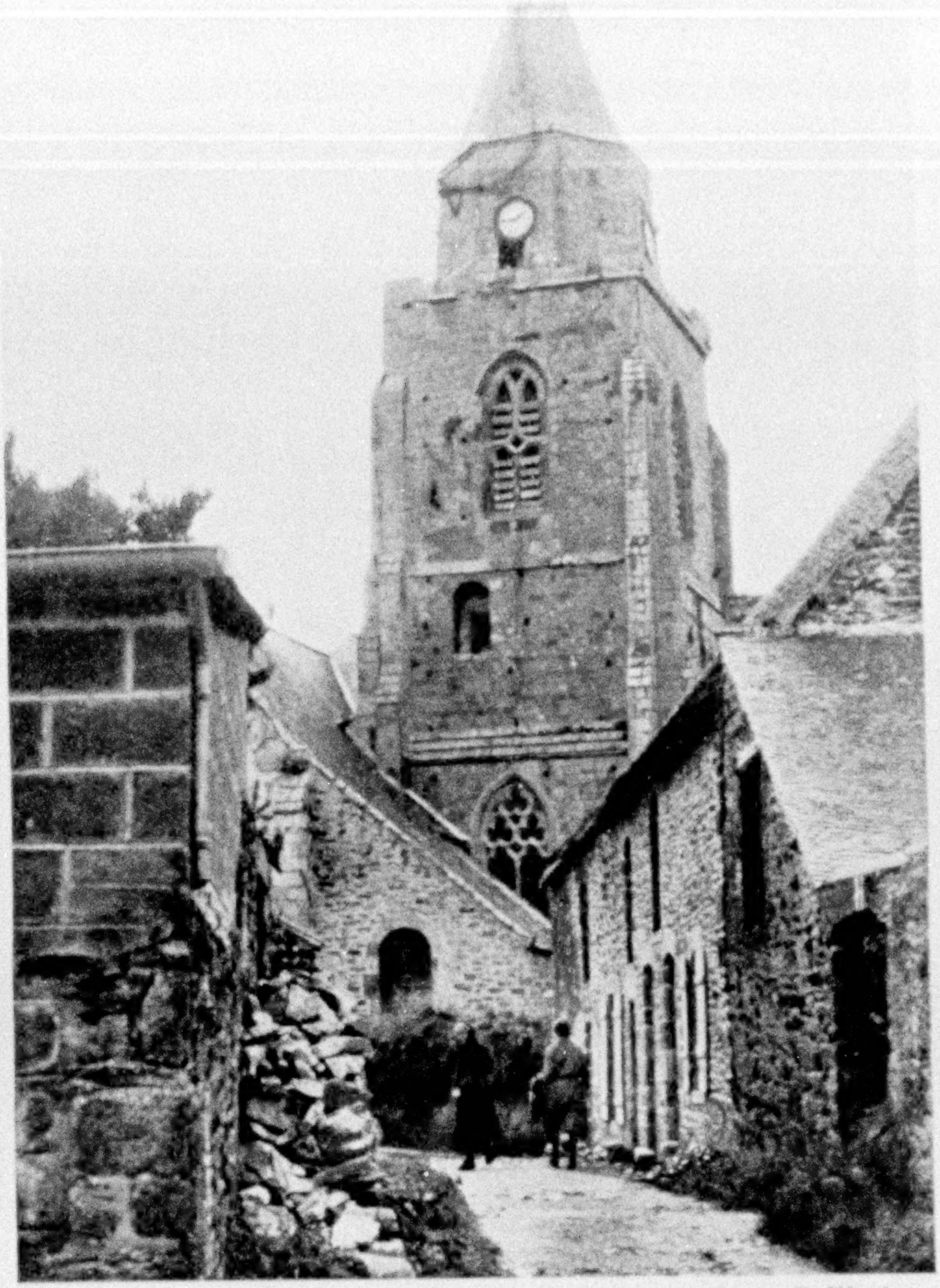
One of the strange old pictures in the municipal museum shows four village belles laughing at the bashful young René. Poor and alone, he died on September 27, 1736; but St. Malo has his name on street signs and one of the city's four statues is of him.

THE KING OF THE CORSAIRS

Loiterers on the ramparts on the Rance River side, near the Dinan Gate, where little steam launches bob across bay and river to dull and fashionable Dinard, occasionally look up to one of the high chimneys of the steep-roofed house on the corner and notice a little sundial of white marble. Local historians insist it is the handiwork of Robert Surcouf, France's uncrowned "King of the Corsairs."

The great Surcouf (1773-1827), who has a namesake street in most of the cities of France, lived in this house, which now is a Norwegian consulate. He was a sailor at 13 and commanded a French warship at 22. He blocked the Ganges, his battles with the English men-of-war made history, and the number of frigates and merchantmen which his crews brought as prizes exceeded the spoils of all others during the years that St. Malo levied its broad-flung tribute over the seas. His bronze statue stands outside the Dinan Gate.

"Tell it to the monkey" is the strictly St. Malo retort of the strong-voiced ladies in the little round fish market when they



Photograph by Junius B. Wood

ST. SULIAC KEEPS GREEN THE MEMORY OF A WELSH MISSIONARY

In its 13th-century Gothic church this village near St. Malo preserves the tomb of St. Tysilio, who came from Wales to labor among the Bretons about A. D. 600. The holy man is said to have reversed the heads and tails of four donkeys to punish them for persistently swimming the Rance and browsing in his garden; and a stained-glass window depicts the animals thus miraculously deformed.

argue over prices. The monkey, frozen into stone, has looked down on the market for 150 years.

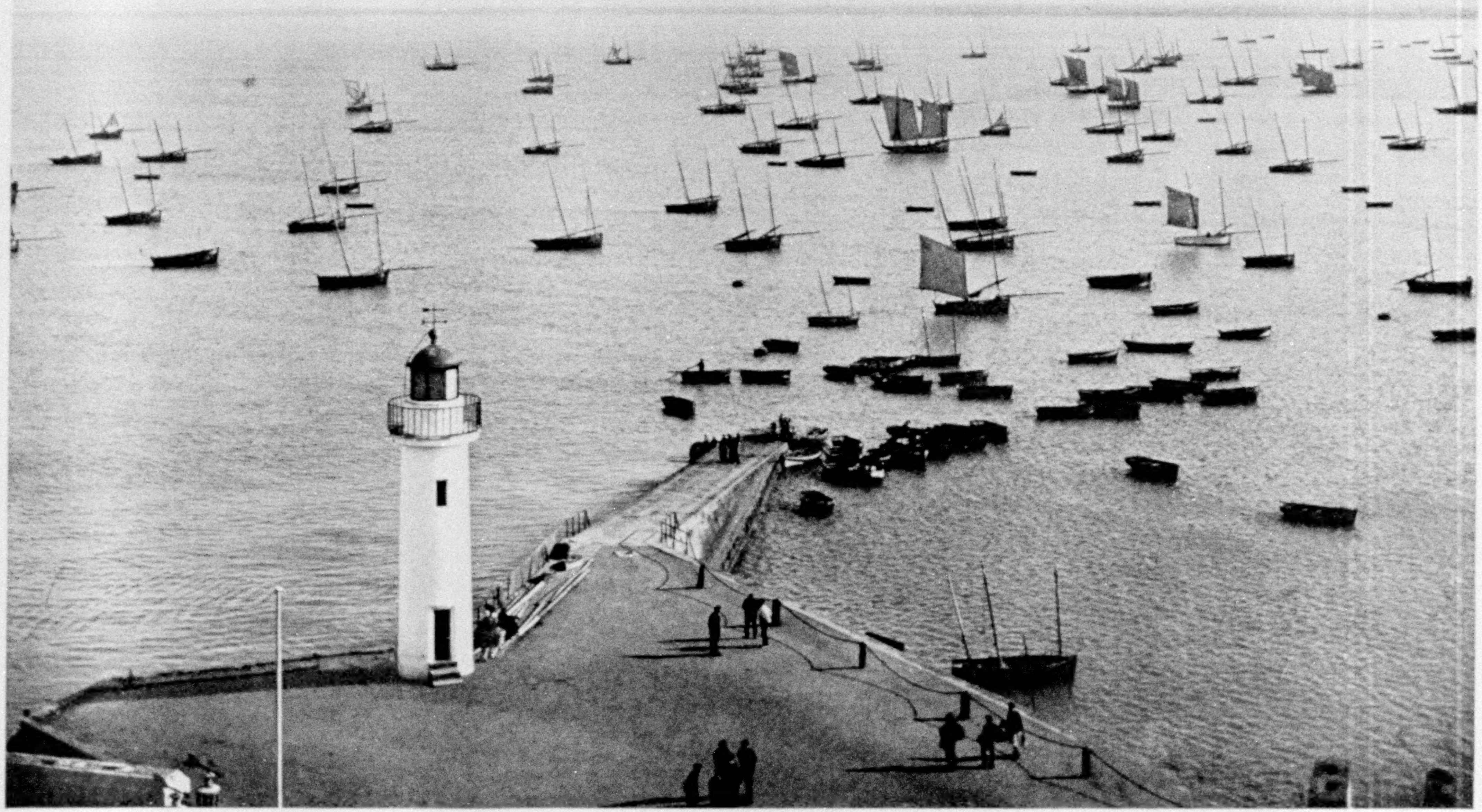
The story goes that a captain who lived in the tall stone house, now a hotel, brought home a pet monkey in 1774. The sight of a woman across the narrow street rocking her baby in her arms was a daily marvel to its simian soul. But one day the woman was horrified to see the animal, perched on the high eaves-trough, giving an imitation of the lullaby with the captain's baby. Afraid that the monkey, if frightened, would drop its precious burden and run, the street kept silent. The resourceful mother, unversed in theories of evolution, but believing that monkeys are mimics, picked up her own baby, swung it back and forth, and laid it on the bed. The monkey coiled its tail around a rain pipe, slid down, and put its baby in the cradle.

The monkey's likeness was carved in stone and, like Lot's wife, remained on the spot. Until 100 years ago, Toussaint Thomas, an aged Malouin, was pointed out as the original baby to prove the tale. He and monkey now are gone and only the stone effigy remains.

Faded and dusty, some of the weird mementos of the days when Mediterranean pirates enslaved St. Malo corsairs and other captives remain in little Brittany churches to-day. When a slave escaped or worked his way to freedom, he would present to his village church a painted leather effigy of himself or of a lost comrade in Turkish costume.

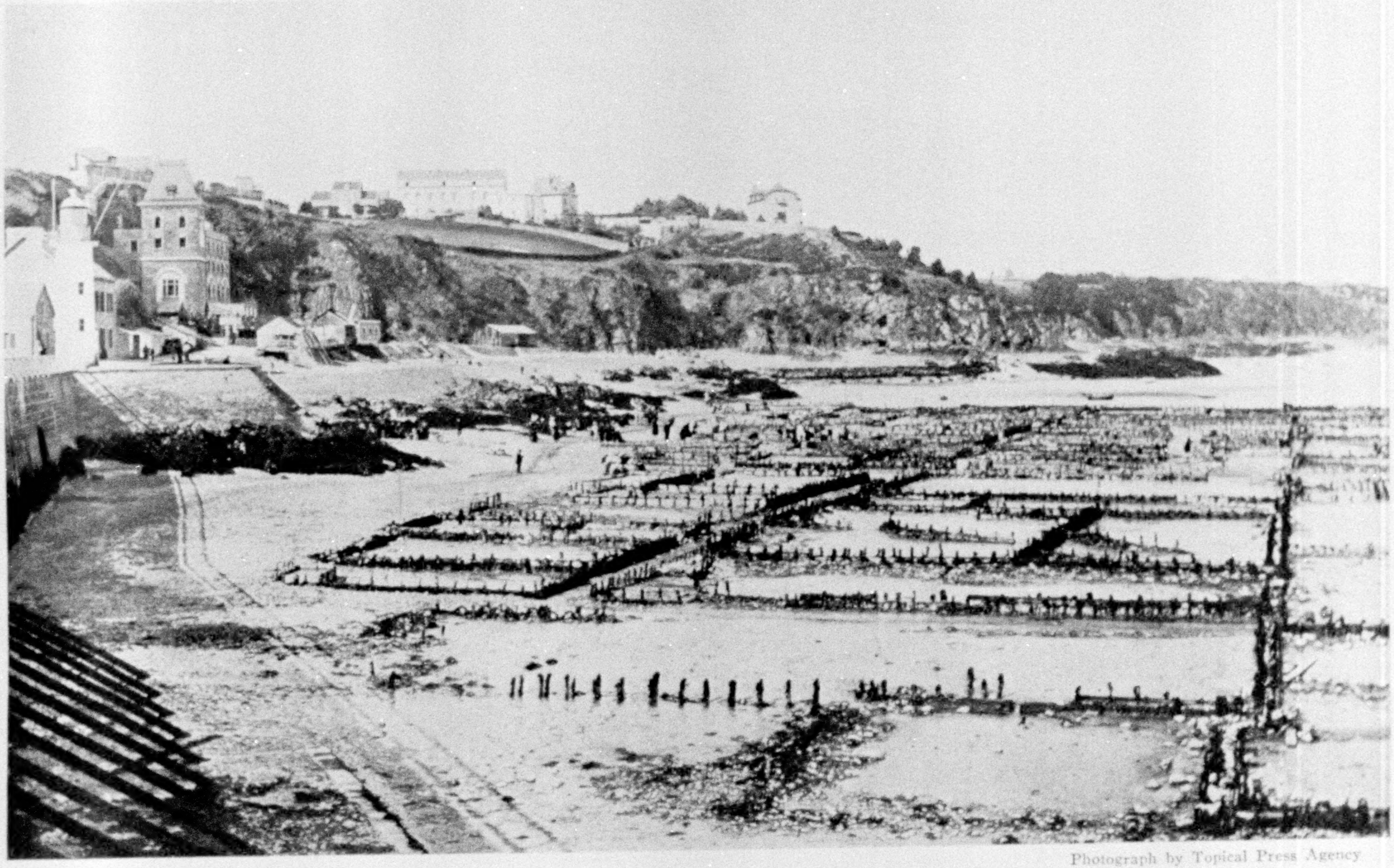
The Malouin especially berated the English, and the king's English did not have enough adjectives to express what the English thought of him. St. Malo chronicles enumerate the city's liberality to English prisoners, and English narrators emphasize their leniency to these "robbers" (other names deleted) of the seas.

A favorite St. Malo anecdote is of a Malouin prisoner tied to an English mast



OYSTERMEN PLY THEIR CRAFT NEAR CANCALE PIER

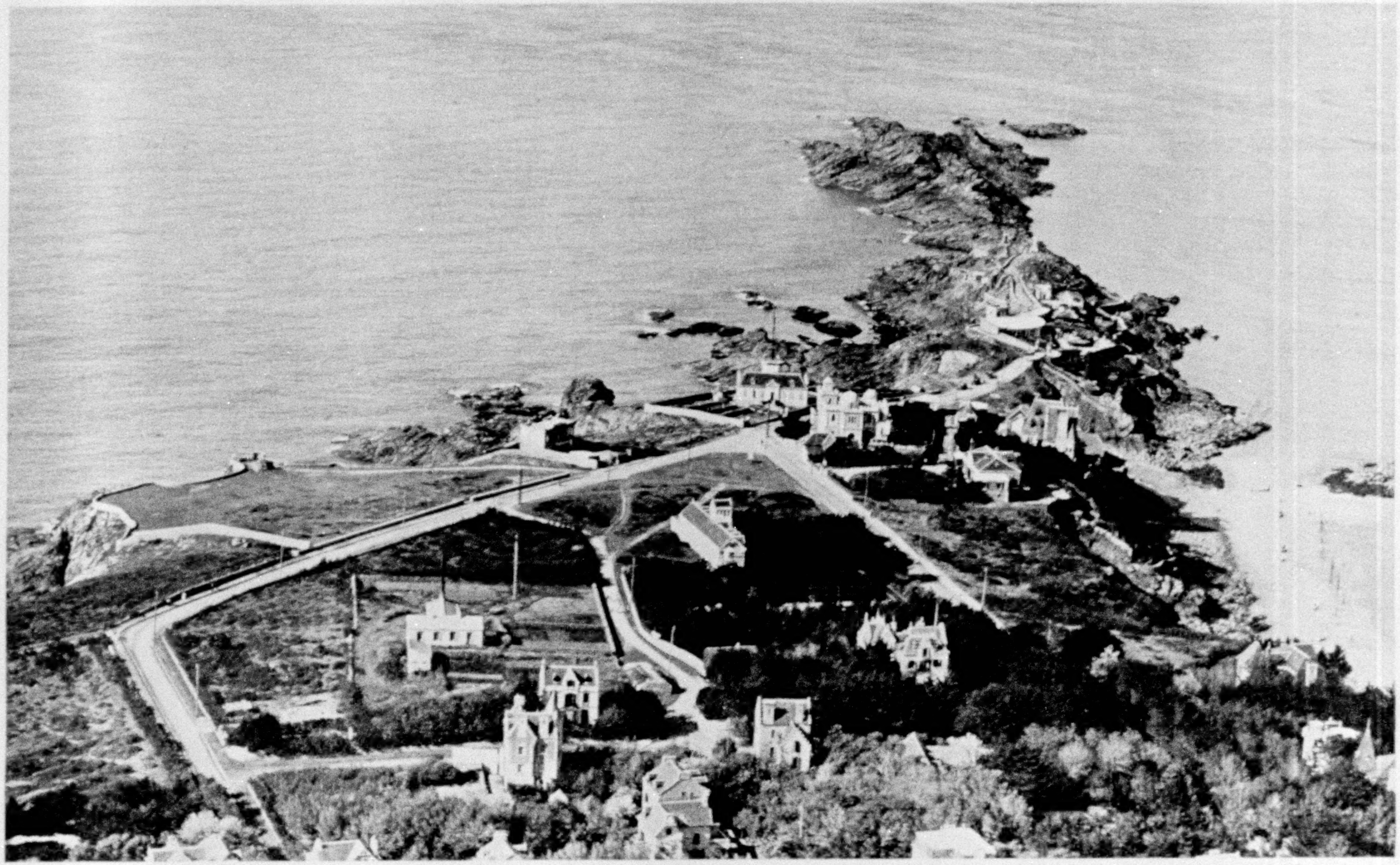
Bivalves nourished in special breeding grounds near by (see illustration, opposite page, and text, page 175) are the main source of revenue at this busy place north of St. Malo. At low tide the beds are exposed. La Houle, the fishing village, is built on the quay. The old town, Cancale-Ville, stands on the cliffs above.



Photograph by Topical Press Agency

CANCALE MAINTAINS OYSTER BREEDING GROUNDS

At the yearly *Caravane* in April the beds from which the fisherfolk of this Breton port derive their livelihood are replenished. The town is famous for its seafood and for the pretty headdresses worn by the women.



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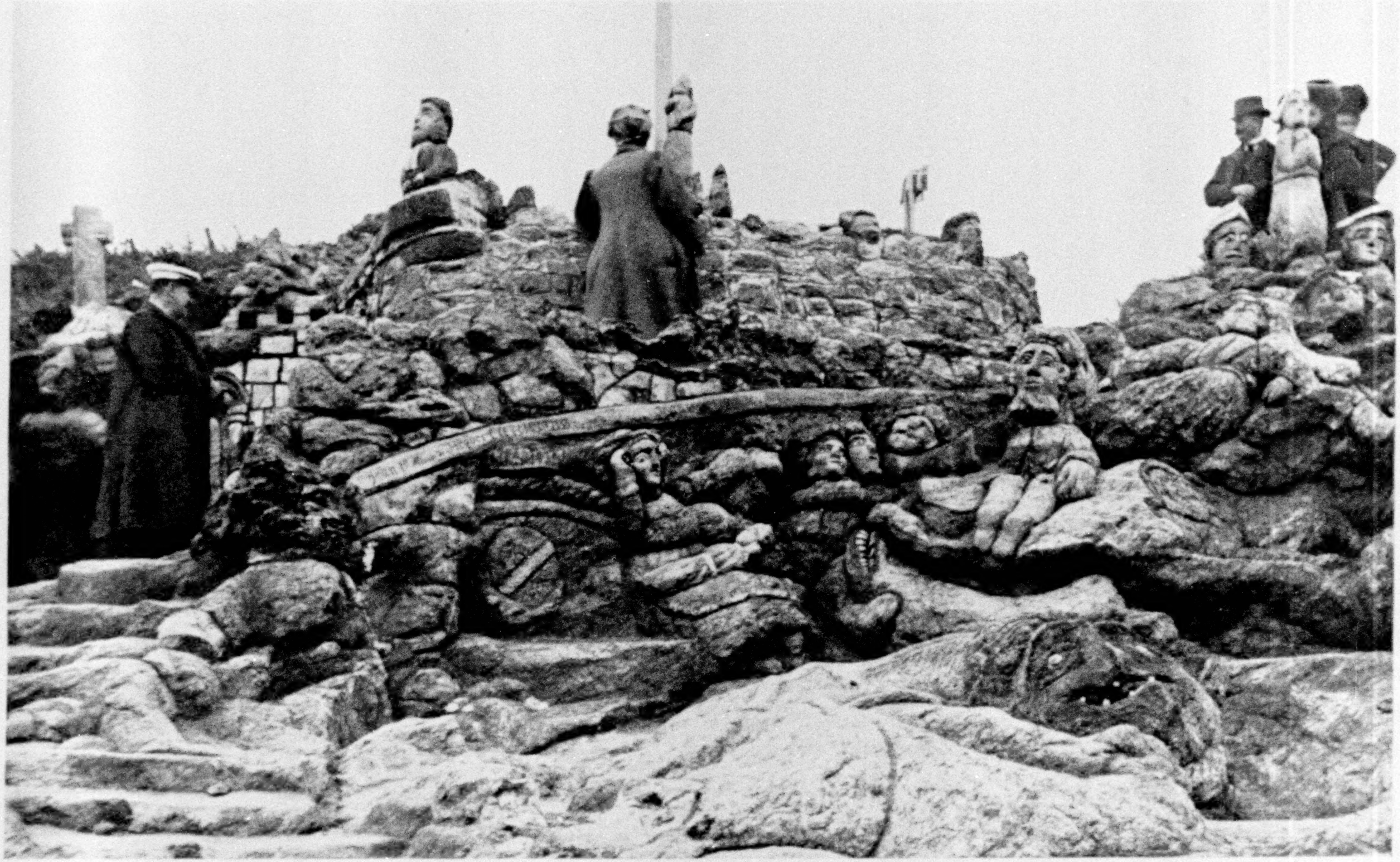
ST. LUNAIRE HAS THE ONLY GOLF COURSE IN BRITTANY

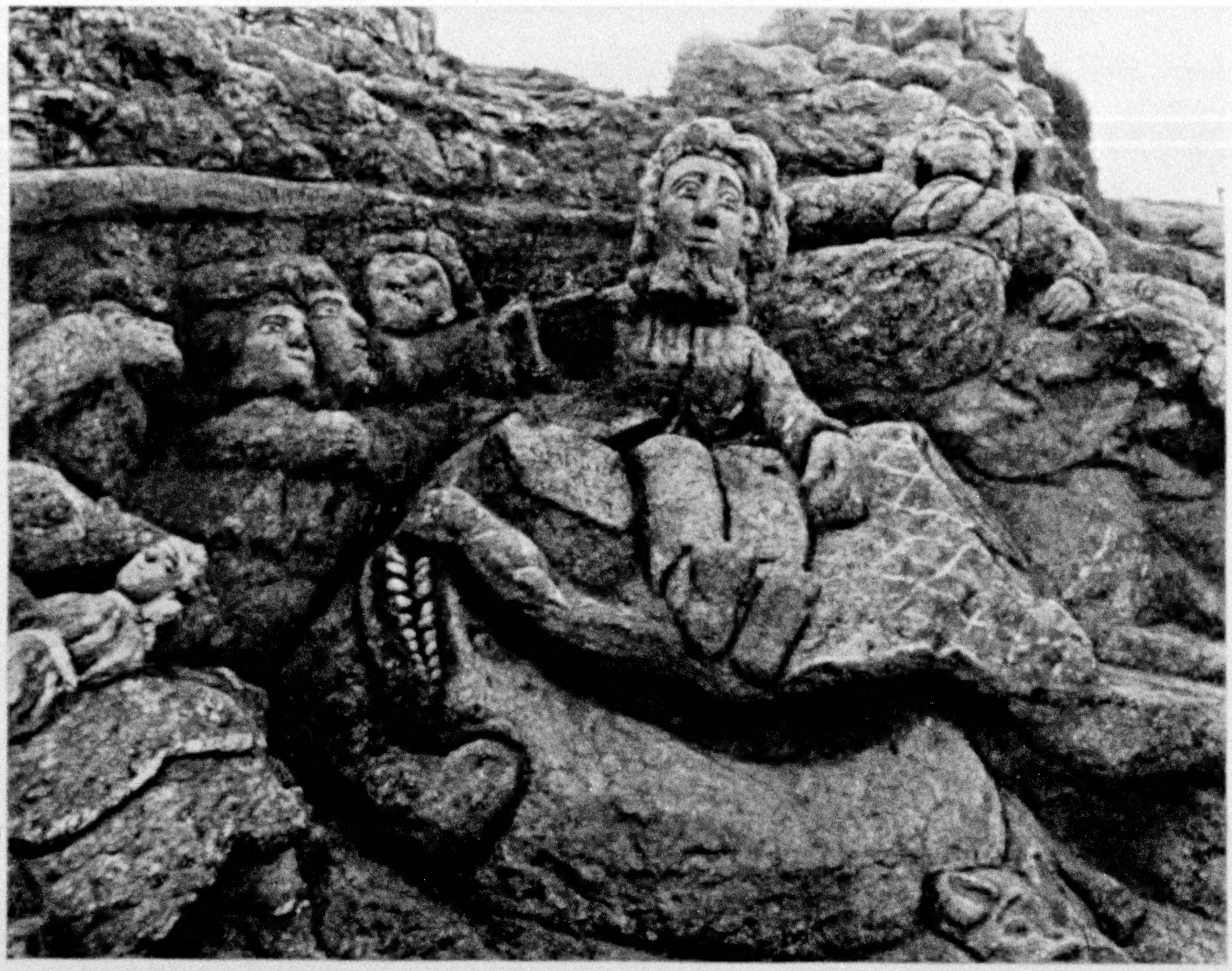
This little city on the Pointe du Décollé, between two sandy-beached bays, has much to attract the tourist. Splendid villas are being built on the characteristic spit of land that thrusts its rugged promontory out into the harbor. The old town, some distance inland, has a disused 11-16th century church with the tomb of St. Leonorius, a Welshman said to be the nephew of St. Briocus.



Photograph by Louis A. J. Barbé

FIGURES BY THE ROTHÉNEUF SCULPTOR COVER A WHOLE CLIFF NEAR ST. MALO

Saints in uncomfortable poses, snakes, animals, and domestic scenes mingle indiscriminately in this extensive display (see, also, illustrations, pages 164 and 165). Abbé Fouré, the artist, died in 1910, and water and weather have already destroyed part of his work and damaged the rest. This photograph was taken some years ago, while most of the sculpture was still intact.



Photograph by Louis A. J. Barbé

SEEN CLOSE UP, THESE FIGURES SHOW AMAZING DETAIL

The Hermit of Rothéneuf was not a master sculptor, but his indefatigable patience is proved by the quantity and intricacy of his work (see, also, illustrations, pages 163 and 165). Besides the rock carvings on the cliff, he made many smaller pieces. The latter, which are mostly of wood, are on display in his house and garden near by.

and slowly succumbing to the jabs of arrows, knives, hot irons, and other implements of a festive crew.

"You fight for gold; we fight for honor," the captain mocked him.

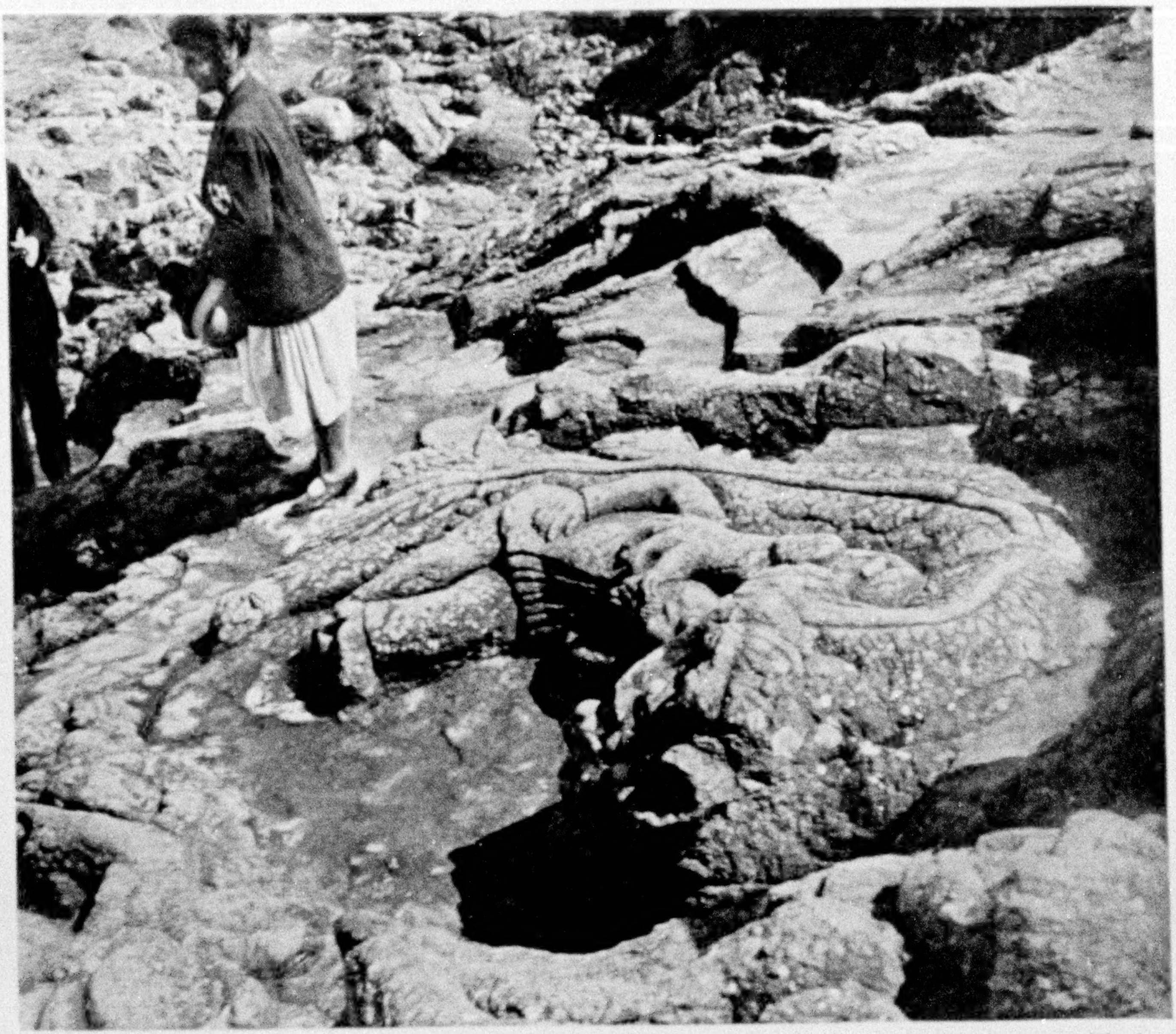
"Then, sir, each fights for what he does not have," the prisoner replied.

"ROBBERS OF SEA AND KING"

In the interests of international amity, St. Malo was forbidden by France to trade with the Spanish colonies. Cádiz hired St. Malo skippers for its ships, just as the French king selected the admiral of his navy from St. Malo (its hydrographic school, founded by Colbert in 1660, now claims to be the oldest in the world); but the great wealth of the St. Malo outfitters came from privateering and clandestine expeditions. Ships cleared under one name for the Canaries and returned in two or three years, under a different name, laden with the products of Asia, Africa, and the Americas. Local port officials never noticed the many tricks and, according to their reports to the royal court, the St. Malo merchants and corsairs were always right.

While other nations called St. Malo's corsairs "robbers of the sea," the royal court in Paris knew them as "robbers of the king." The most precious treasures of their returning cargoes were smuggled into cellars and granaries before the Paris appraisers arrived.

St. Malo threatened to become a republic rather than pay taxes. When Colbert asked its bishop to collect 30,000,000 livres from his wealthy vassals as a loan to the bare treasury of Louis XIV, the bishop sarcastically refused. By threatening to blockade the port, Colbert collected the tribute, which the merchants knew would never be repaid. However, in 1711, St.



Photograph by Junius B. Wood

ABBÉ FOURÉ DEVOTED A LIFETIME CARVING THE ROCKS AT ROTHÉNEUF

In this outdoor gallery is found a collection of some of the quaintest sculptured figures in the world, the work of a priest who probably learned his art from the grotesque ossuaries of Breton churchyards (see, also, illustrations, pages 163 and 164).

Malo offered to furnish six fighting ships to the French navy to drive the English from the coast of Peru. The city's clandestine commerce was in danger.

THE "CHAPLAIN OF THE CORSAIRS" COMBINED RELIGION AND TRADE

On the corner of Rue St. François is a plain stone house with "1648" chiseled over its door. Here lived Noël Jouin, better known as l'Abbé Jouin, "Chaplain of the Corsairs." Guidebooks are silent on this famous son of St. Malo, but Etienne Dupont, scrupulous historian that he is, gives a volume, "L'Aumônier des Corsaires," to one who was either the most meteoric rogue or the unluckiest merchant of his age.

The abbé combined religion and trade. Born the son of a ship carpenter, at ten he stood first in his parochial classes. He became assistant chaplain on a corsair expedition, and after that the salt of the sea was sweeter to his nostrils than the incense of the altar.

Law required that each crew of 40 men or more have a chaplain. The pious Breton sailors also insisted on one. The chaplain often doubled as supercargo and even joined in the fighting. He was allowed to trade on his own like other sailors, but his rations and quarters were of the worst.

Abbé Jouin bargained and saved on three voyages and knew the American coast and the resources of its cities as well as any veteran corsair. His own most famous expedition—the ships *La Confiance* and *Le Brilhac*, each of 300 tons and

32 cannon and with crews of 100 and 120 men respectively—sailed from St. Malo on January 23, 1706. After 39 months of illicit trading, from Mexico to Chile, The *Confiance* was back in Port Louis, Brittany. The *Brilhac,* with most of the profits, was home earlier, before the storm broke.

The *Confiance* was one of the seven French corsairs which two French men-of-war convoyed home from Concepción. On the escapade of this famous fleet is based the fable that St. Malo merchants once loaned 30,000,000 livres to Louis XIV. Advance reports from Chile and Martinique fixed that as the value of the cargo, and Versailles celebrated on the strength of the taxes anticipated for its depleted treasury. Probably the 30,000,000 livres' valuation of the cargo was nearer correct than the tenth of that amount which the owners insisted on when Count Pontchartrain started to collect.

The royal treasurer's wrath became furious when he discovered that the crafty Abbé Jouin, either by blandishments or bribes, had convinced the captain of the frigates that the *Brilhac* could carry the royal dispatches home quicker than the slow convoy. His most valuable cargo had been transferred secretly to that ship, carried to France, and safely hidden away.

On April 10, 1709, two weeks after the arrival of the fleet, Abbé Jouin was in the safest cell in Port Louis; the King's own guards had gone to Rennes to take him from the admiring Malouins.

THE CHAPLAIN CONSOLES THE LOVELORN

Prison or monastery cell did not disconcert Abbé Jouin, who figured his accounts, planned for the future, and gently sympathized with the aged commandant of the fortress-prison, who was dreaming of marriage and a country château, but lacked fortune or pension. In an "unguarded" moment the abbé confided to the commandant that the *Brilhac's* strong box, which was being held for him, was filled with treasure destined as a dowry for his sister. The officer's aged heart fluttered with tender sentiment, and since he could not marry the ward of a prisoner, he interceded with the King, and Abbé Jouin was released.

Abbé Jouin, no longer interested in love, was back in business. The disconsolate commandant got more laughs than sympathy. A perplexed and angry Pontchartrain, realizing that instead of revenue he had a jilted spinster (the abbe's sister) on his hands, induced Louis XIV to find a place for her in a convent. Some historians say she never existed.

In 1711 Louis appointed Abbé Jouin private chaplain for his brother's wife, "Madame" Charlotte Elizabeth d'Orléans, "Liselotte," mother of the future regent of France and one of the most prolific and unabashed letter writers history has ever seen. "La Madame" approved of her chaplain, as the shrewd king expected, because his chapel services were never more than 10 minutes long. "To me it's opium," was her characterization of religion.

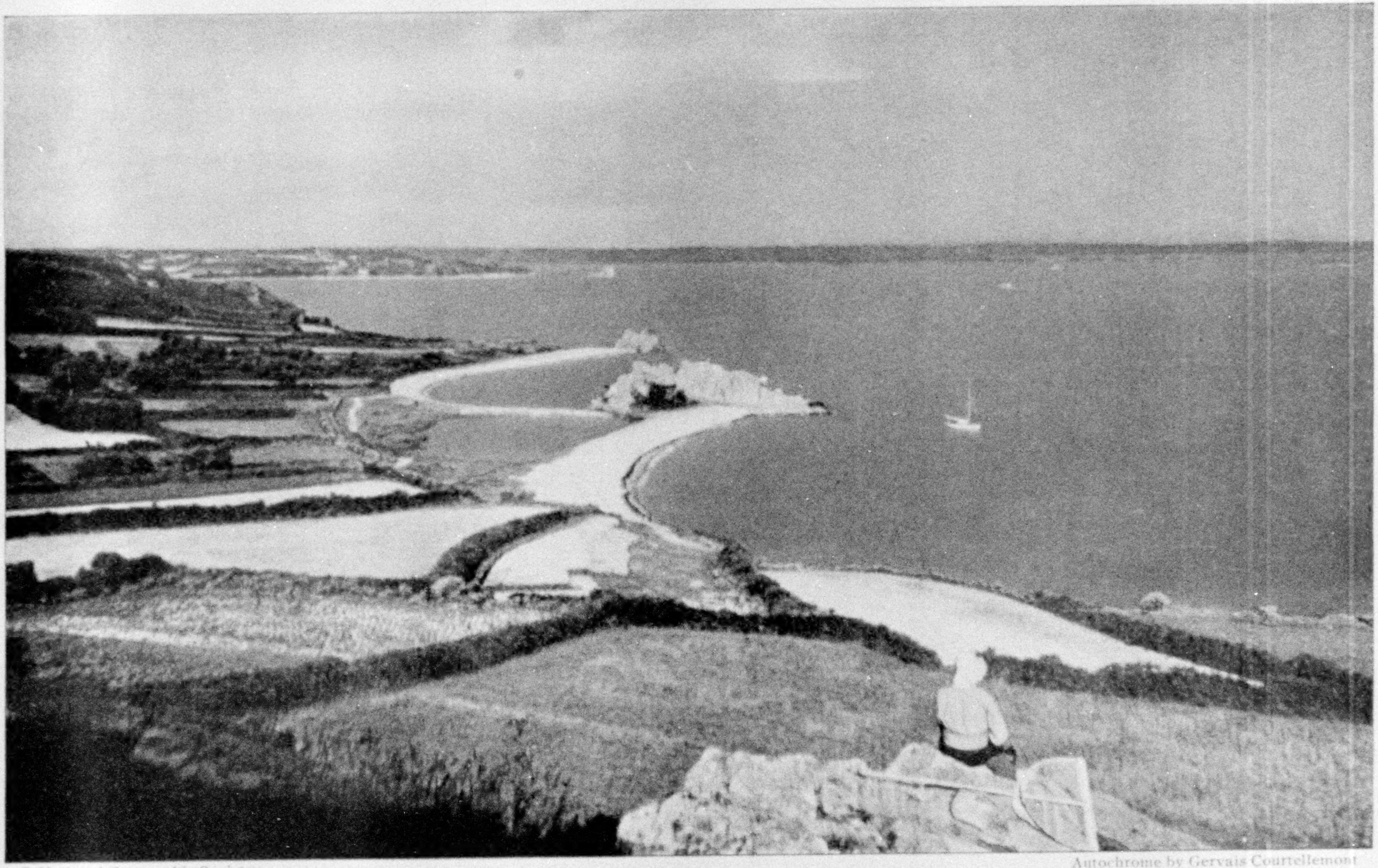
When, in 1713, a court ordered the *Brilhac's* strong box opened, several hefty stones were found inside. A local geologist declared they had never voyaged farther than from the Hennebont quarry. Abbé Jouin, who then was high in the grace of royalty, indignantly protested that his treasure had been stolen and the stones substituted while he was in prison.

A MALOUIN GIBE

The next year Abbé Jouin lost his entire fortune in a single luckless venture. He is last heard of petitioning the King of Spain to send him to convert the Indians of Patagonia.

Visitors to the Château to-day are shown several old solid shot in the walls and told that they are from the first English bombardment. No shot could imbed itself in those walls, and, what is more, the walls were not built at that early date. In 1378 the Duke of Lancaster, with 4,000 soldiers, 8,000 archers, and 400 cannon, led the first of the futile English bombardments of the Corsair City. St. Malo had declared its independence of English rule, which then was over most of Brittany.

In 1439 they tried again and in 1692 were back with a Dutch fleet, while in 1693 an imposing English fleet settled down for a three-day attack, ending with the explosion of the famous floating mine



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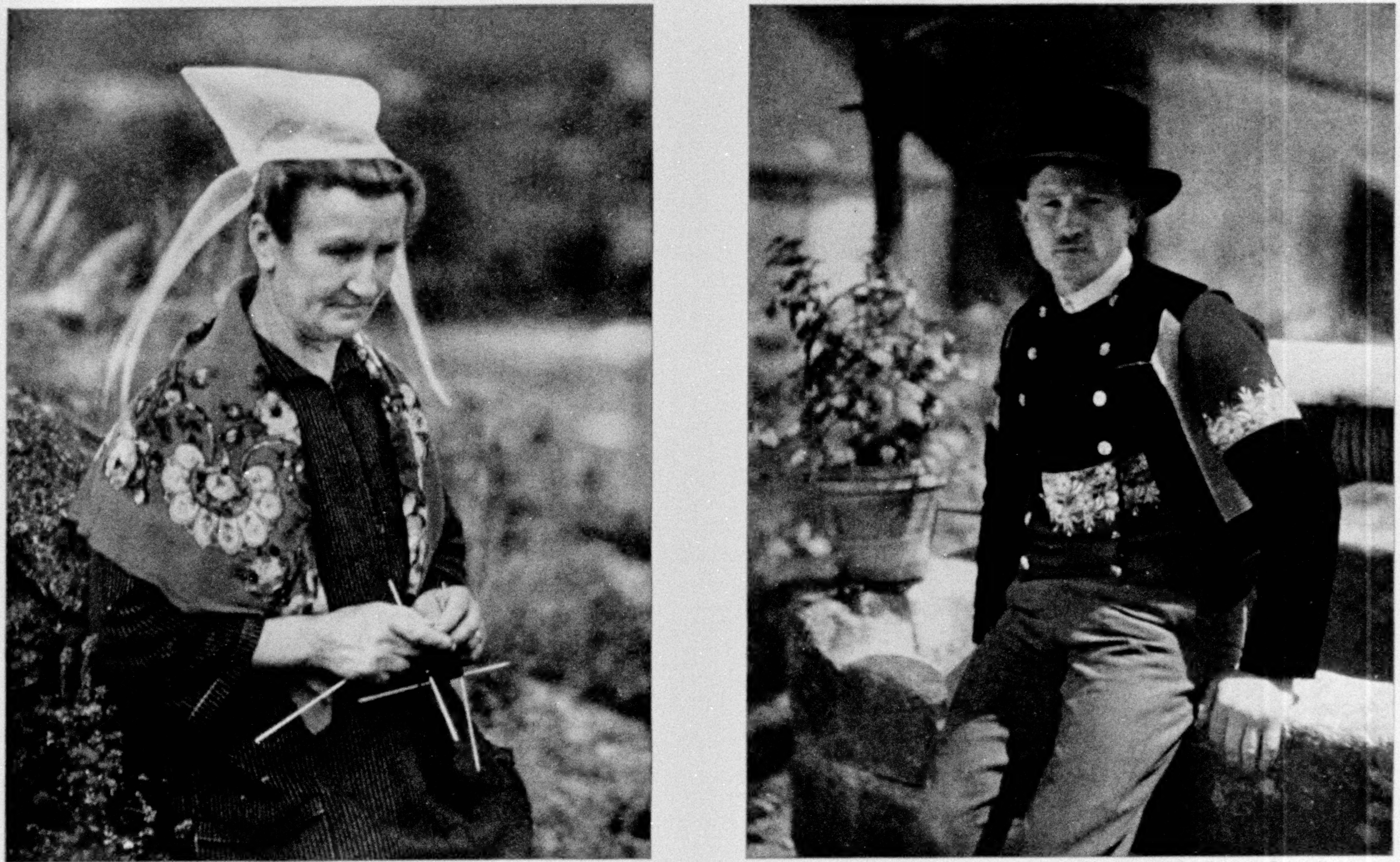
BRITTANY, LIKE IRELAND, HAS ITS EMERALD ISLES AND WINDING BAYS

At Arcouest Point, opposite the fortified Ile de Bréhat, the sinuous coastline, bordered by hedged fields smiling in the glow of a clear morning, reminds the traveler of the shores of Killarney. Breton and Irish folk, as well as their countries, have much in common.



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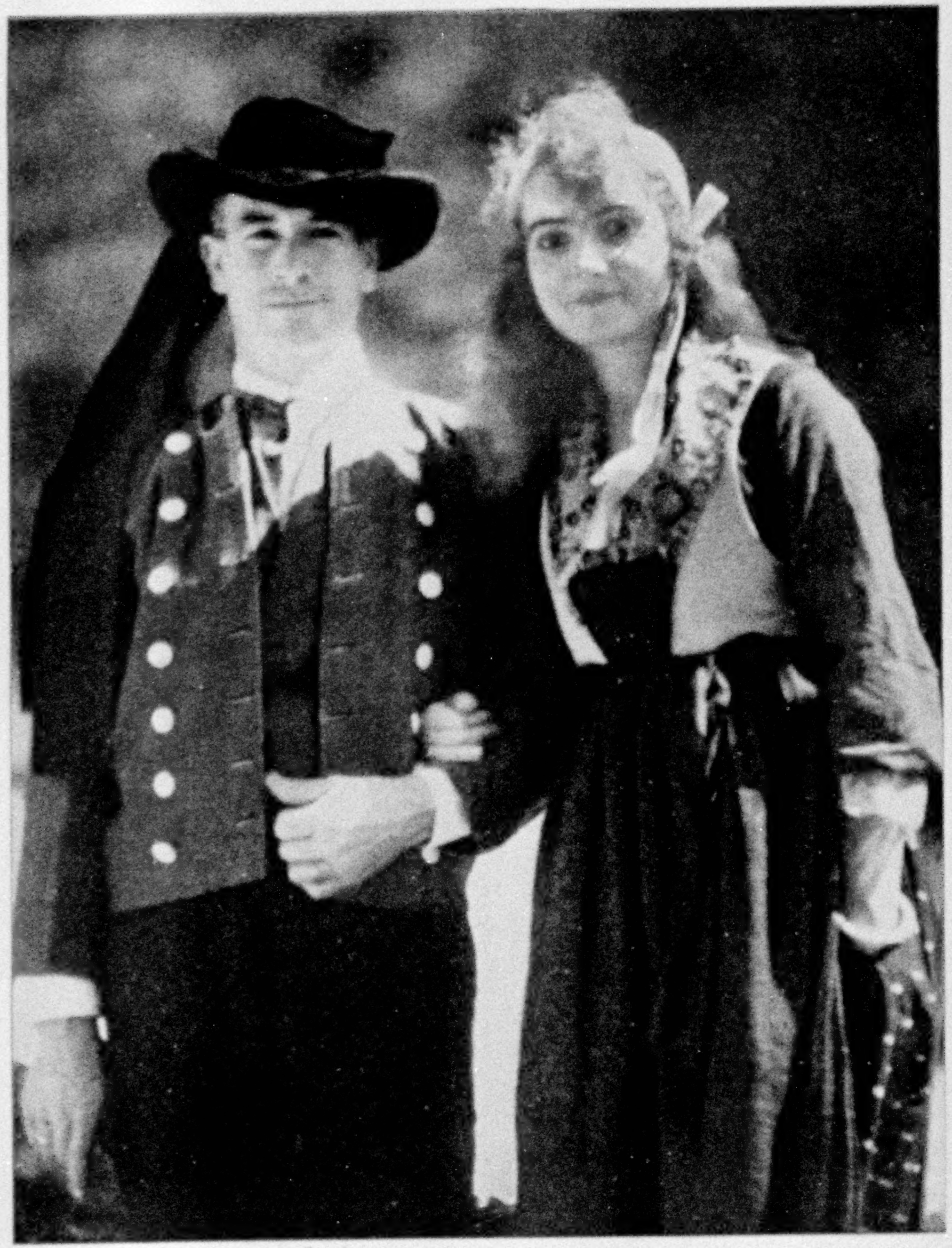
BRETONS OF BOTH SEXES ARE FAMOUS NEEDLEWORKERS: THE MEN EMBROIDER THEIR OWN JACKETS

With handsome hand-decorated shawl about her shoulders, the woman guardian of the Tour de Kerroch, north of Paimpol, whiles away the hours of service with knitting. The young gallant is arrayed in fancy Cornouaille costume for the Pardon at Plogonnec.



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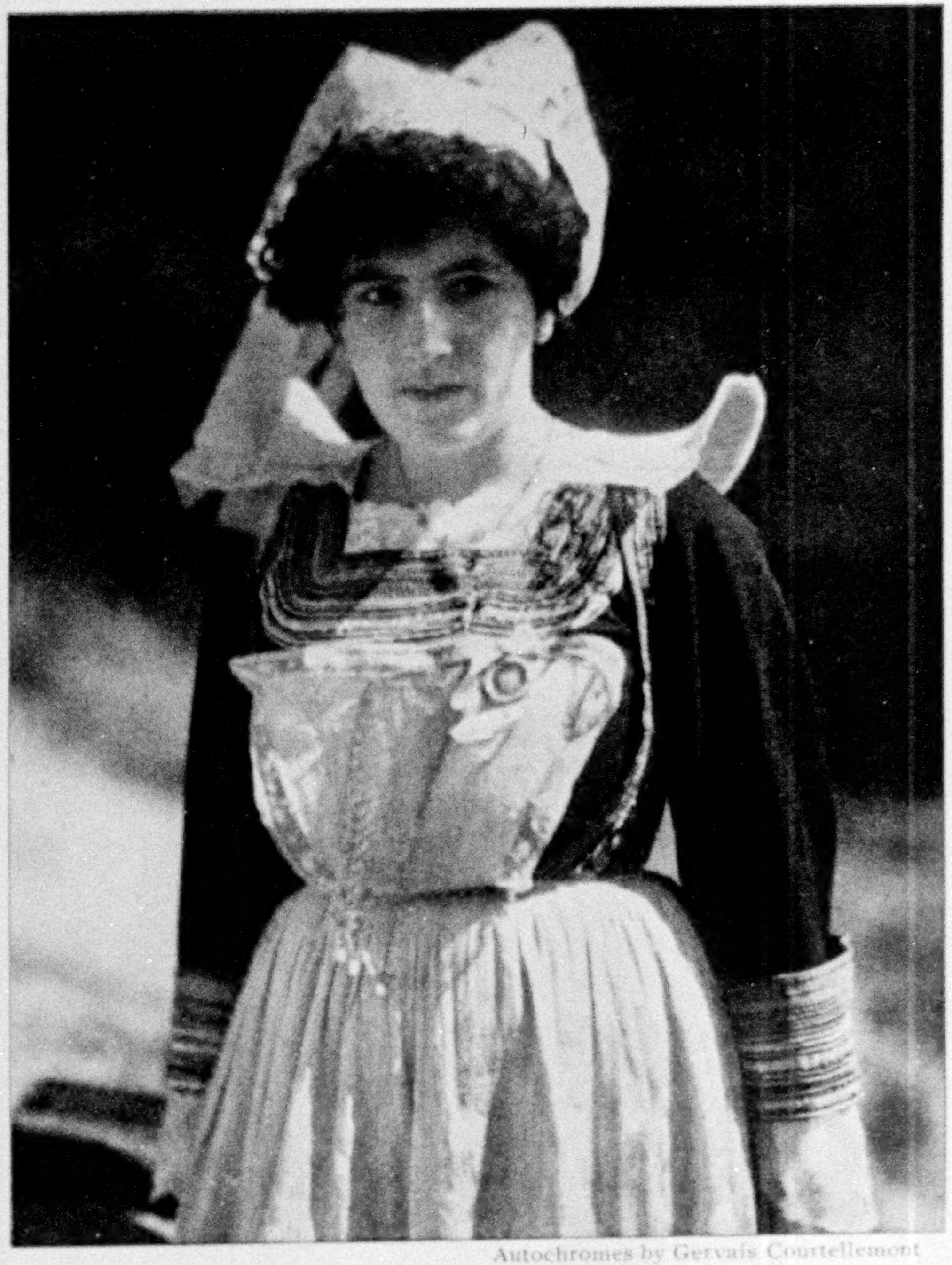

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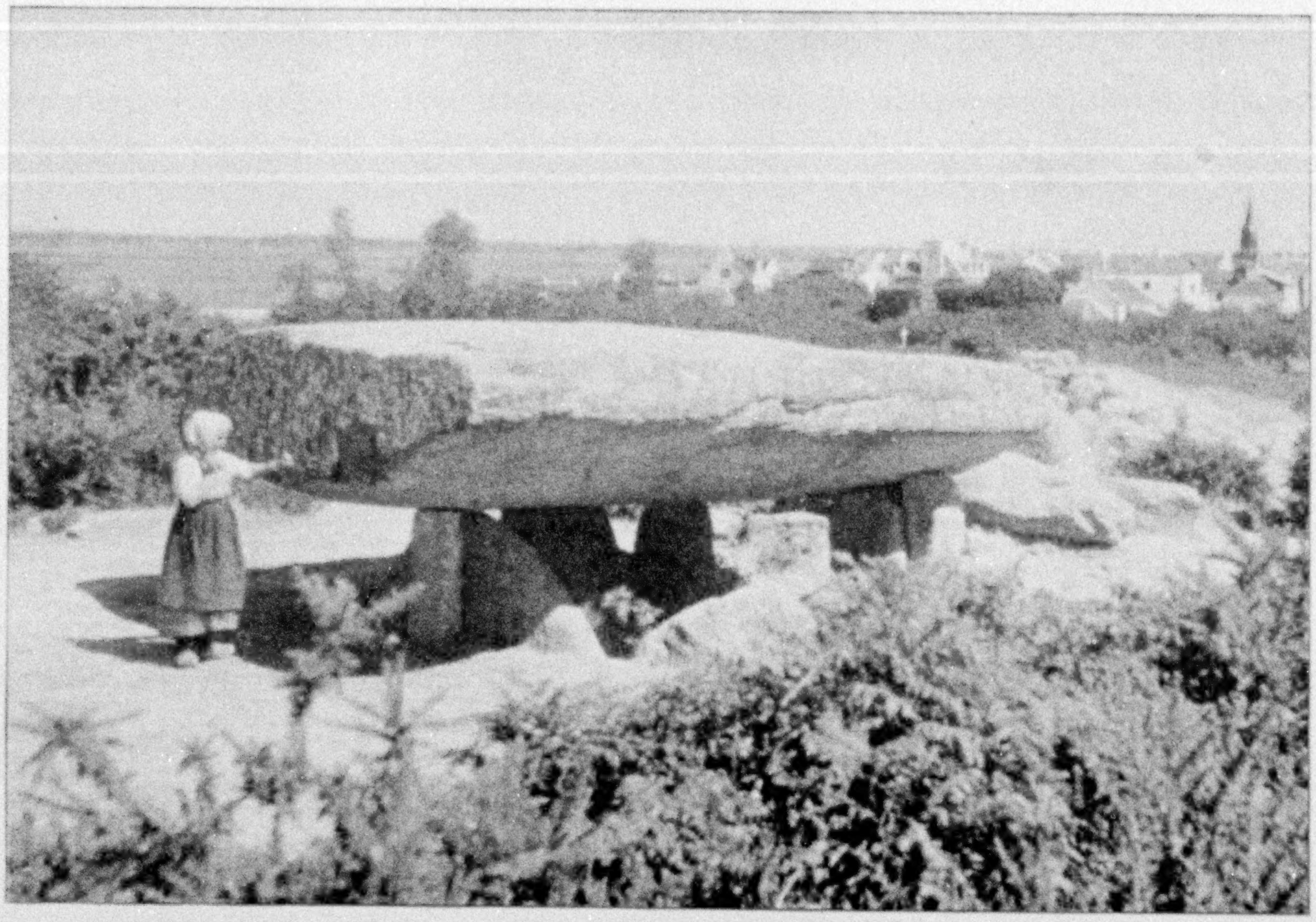
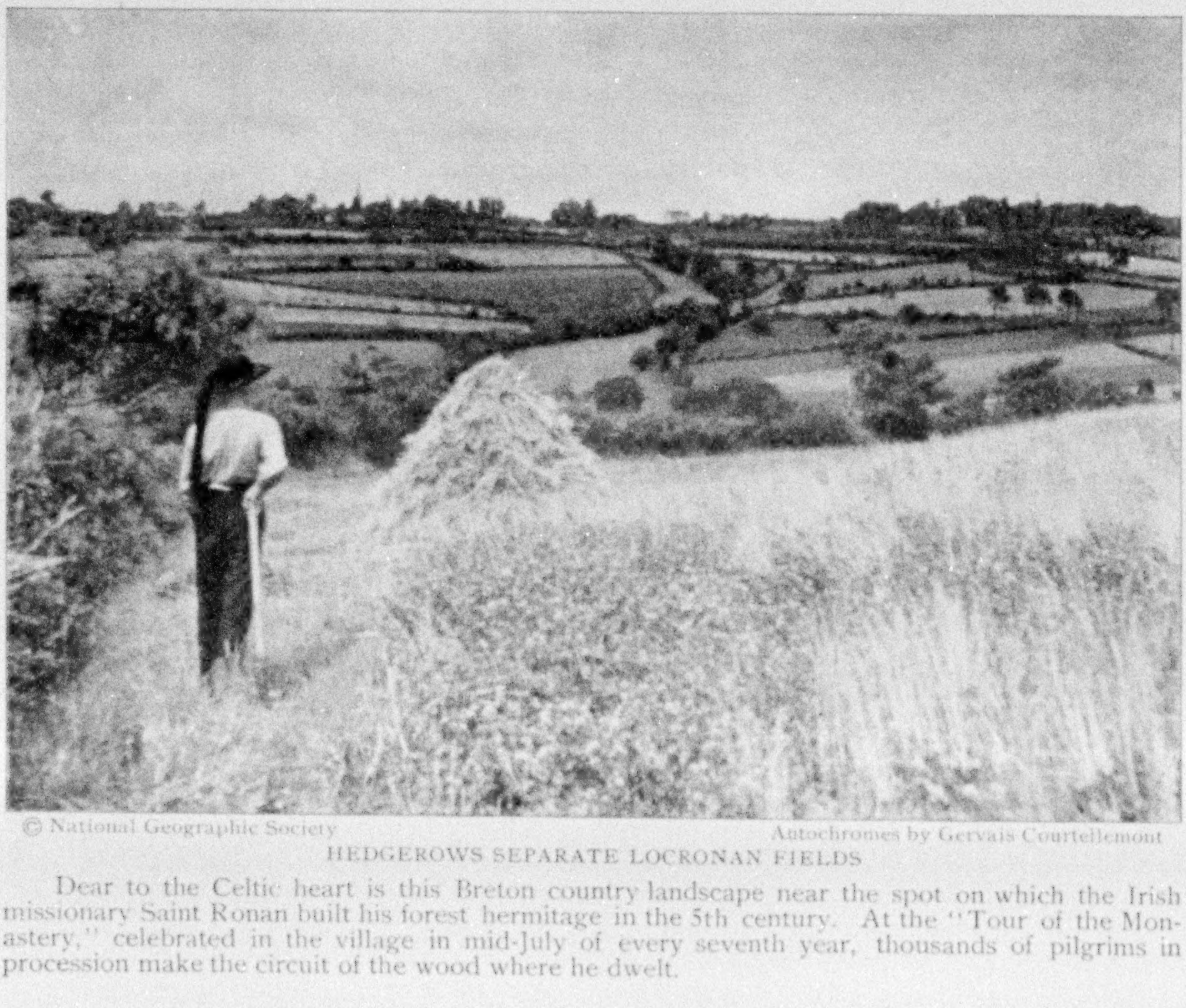
TRADITIONAL COSTUMES APPEAR AT ALL CELEBRATIONS IN BRITTANY

This good-looking couple of Plougastel are on their way to church. Sundays and days of weddings or religious fêtes afford opportunity for folk of the village to don fancy apparel. The young woman at the right has taken an award at the Blue Nets Feast of Concarneau with her Pont-Aven dress.



LOCMARIAQUER DOLMENS ARE REMARKABLE FOR SIZE

The ancient Table des Marchands is supported, at the end near which the peasant woman stands, by a conical inscribed menhir. Relics here are fewer but much larger than those at Carnac (see Color Plate XIII).



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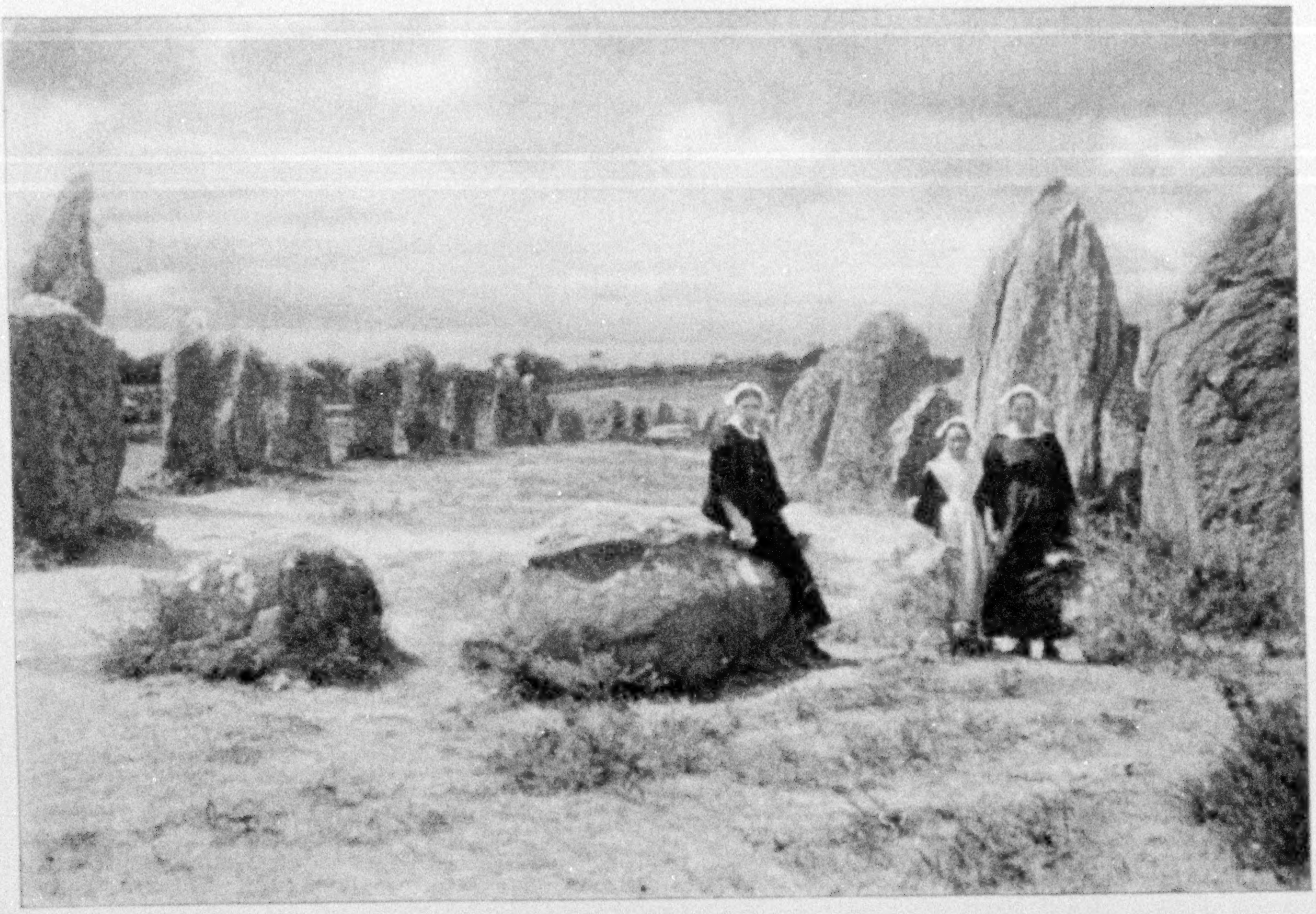
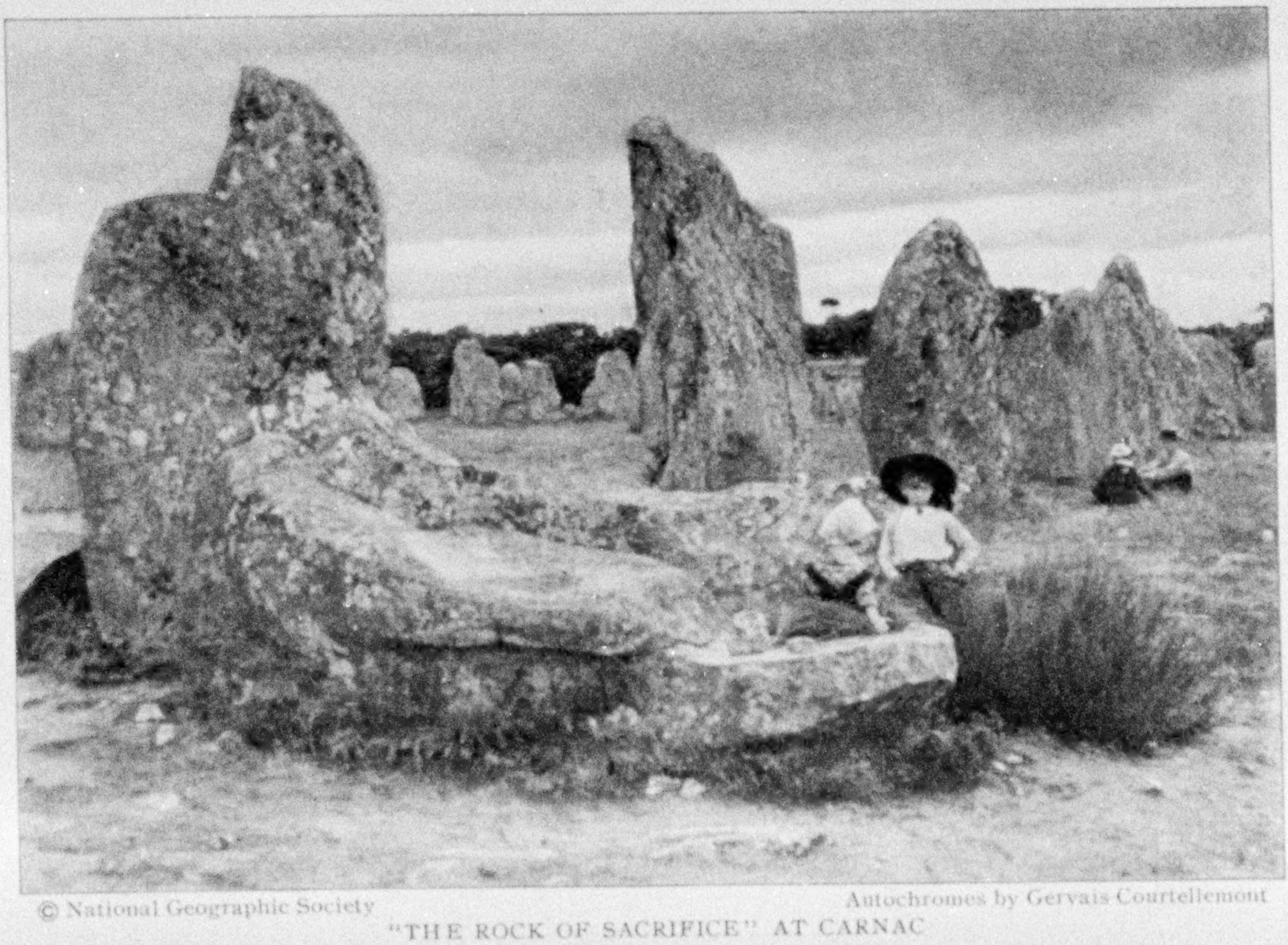
HEDGEROWS SEPARATE LOCRONAN FIELDS

Dear to the Celtic heart is this Breton country landscape near the spot on which the Irish missionary Saint Ronan built his forest hermitage in the 5th century. At the "Tour of the Monastery," celebrated in the village in mid-July of every seventh year, thousands of pilgrims in procession make the circuit of the wood where he dwelt.



THE ALIGNMENTS OF CARNAC COMPRISE 2,813 MENHIRS

Modern scholars recognize the probable funerary character of these lichen-covered megaliths, but the Auray women accept the local tradition that they are pagan hordes miraculously turned to stone while pursuing Saint Cornelius to the shore.



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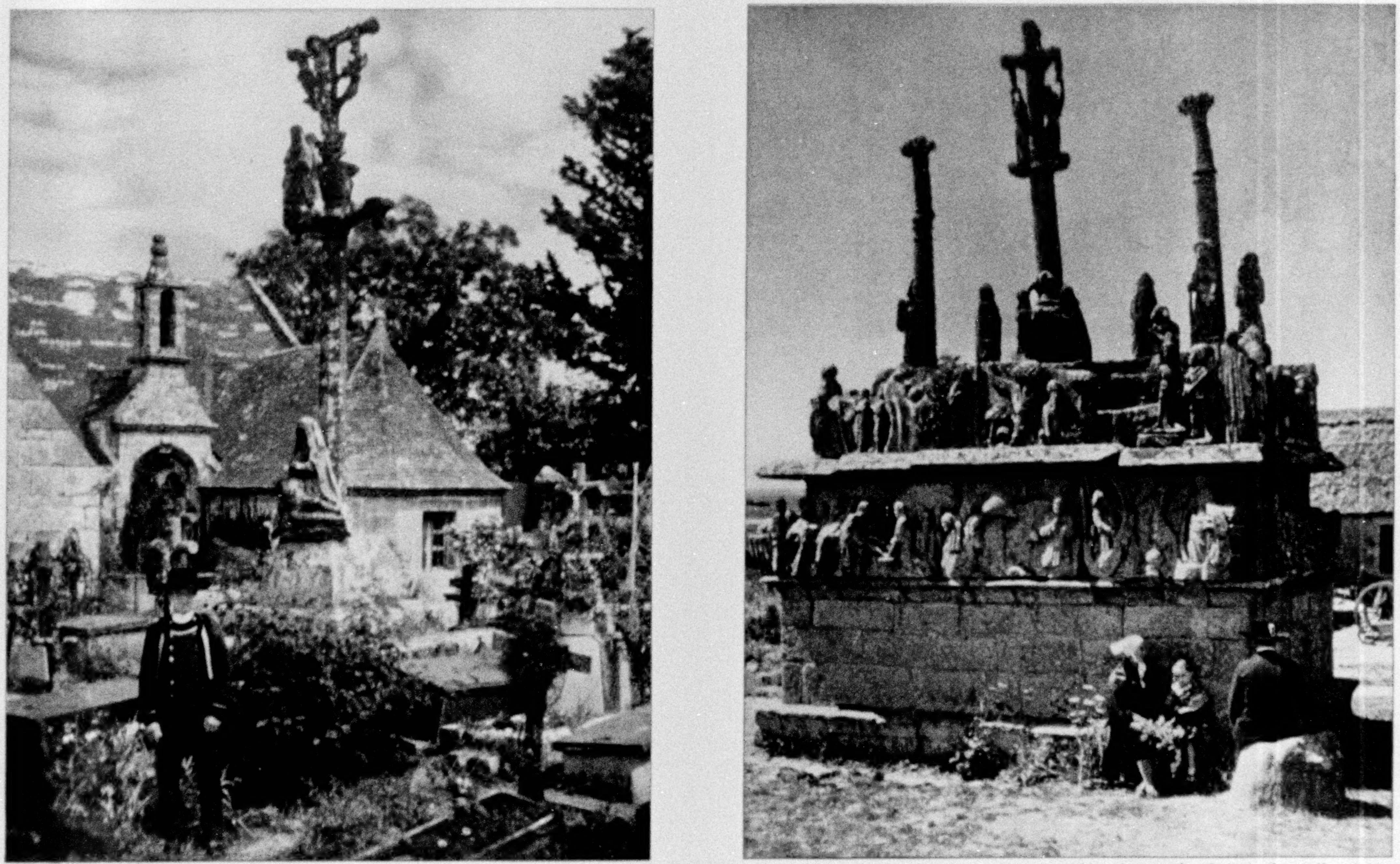
"THE ROCK OF SACRIFICE" AT CARNAC

Eighteenth-century students dismissed this altarlike megalith and the other stones in the lengthy avenue at Carnac as mere windbreaks erected by Roman legions to shelter their tents. Modern authorities know them for monuments of a forgotten people (see "The Mysterious Prehistoric Monuments of Brittany" in the National Geographic Magazine for July, 1923).



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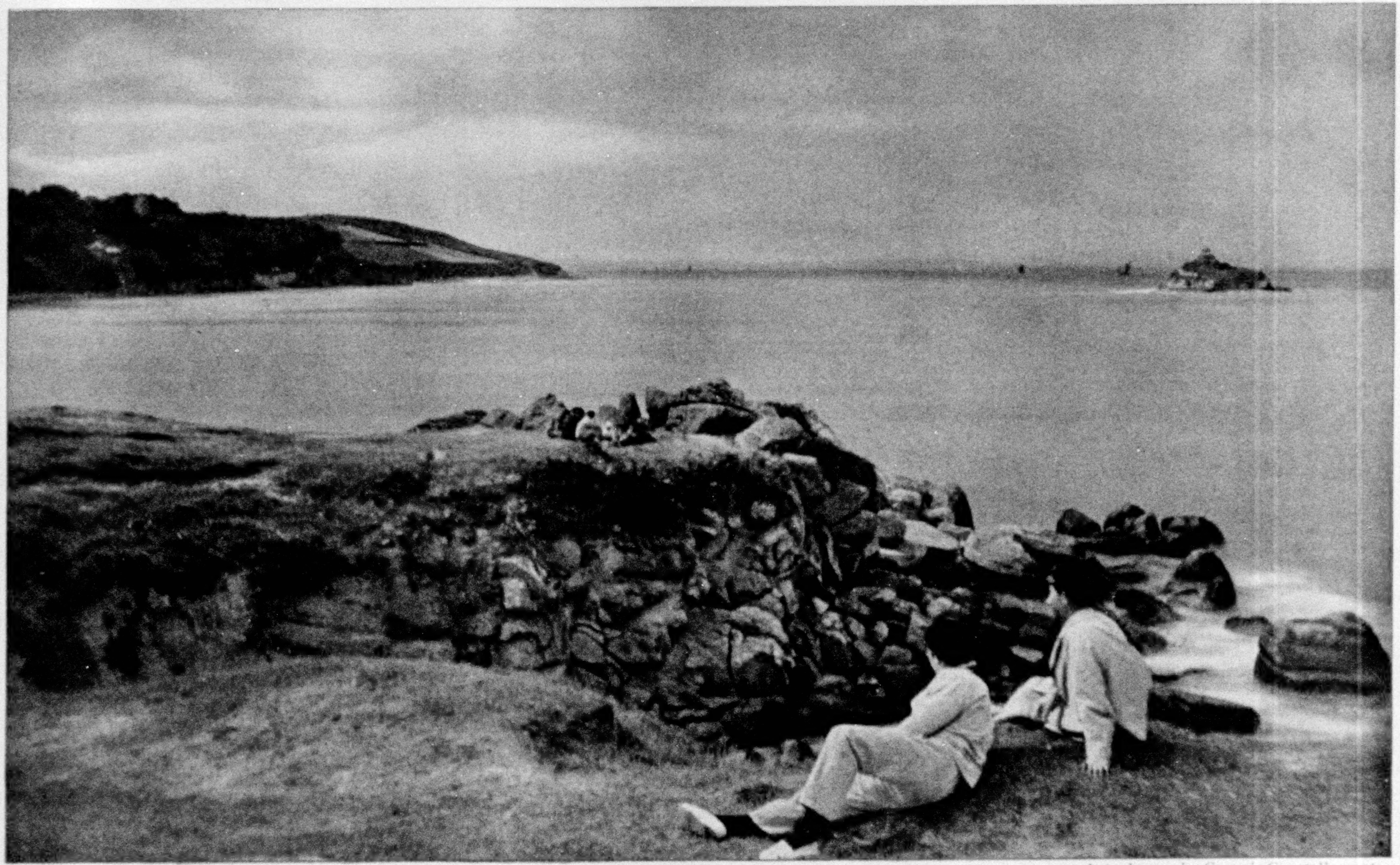
MUCH OF THE CHARM OF BRITTANY IS IN ITS PLACES OF WORSHIP

The venerable man at the left pauses for a moment among the graves after attending services in the ancient church at Ploéven. The Calvary of Notre Dame de Tronoen, at the right, is the oldest in the province. Such structures are to be found throughout the country, not only near chapels but by waysides and at crossroads.



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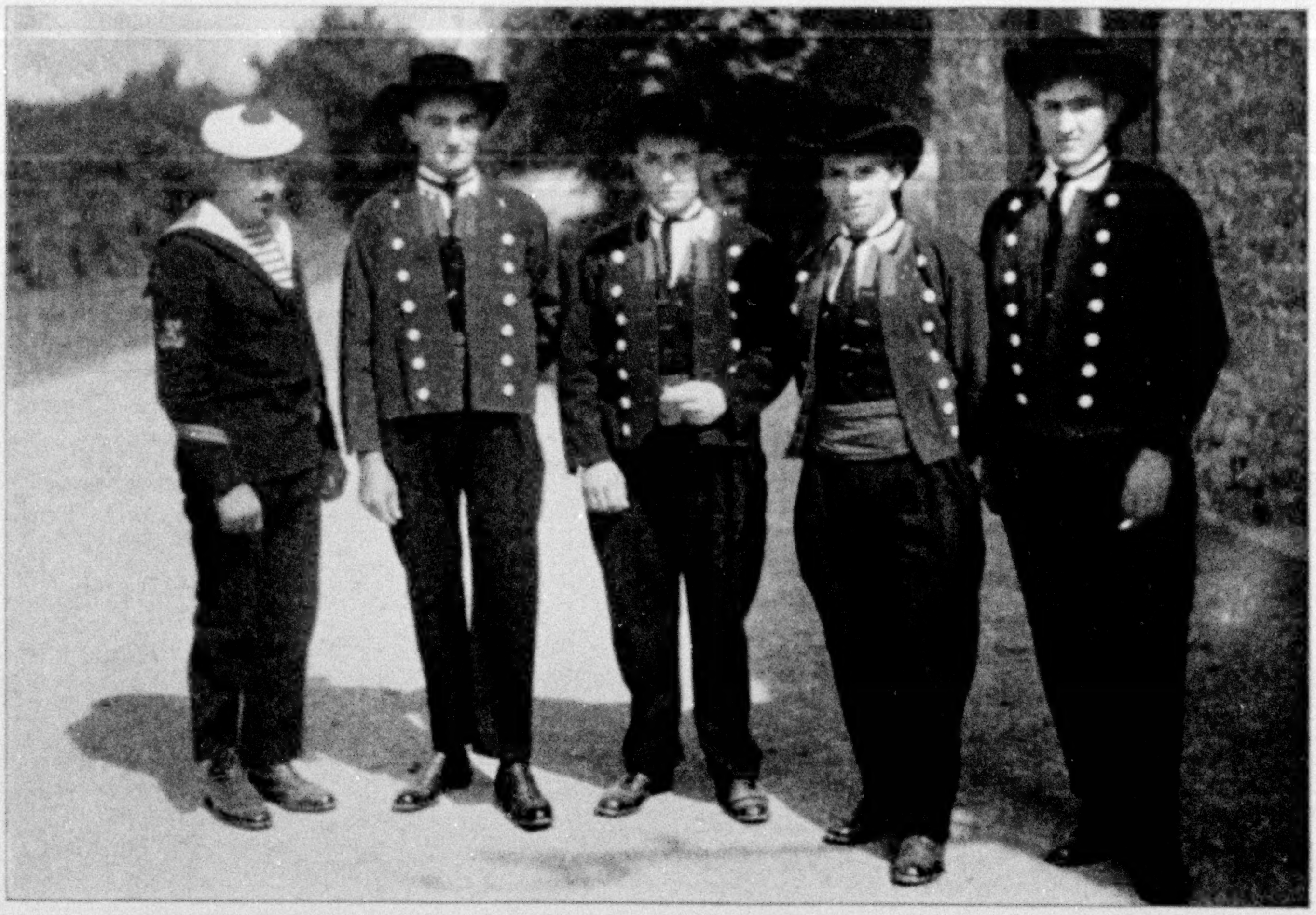
Autochrome by Gervais Courtellemont

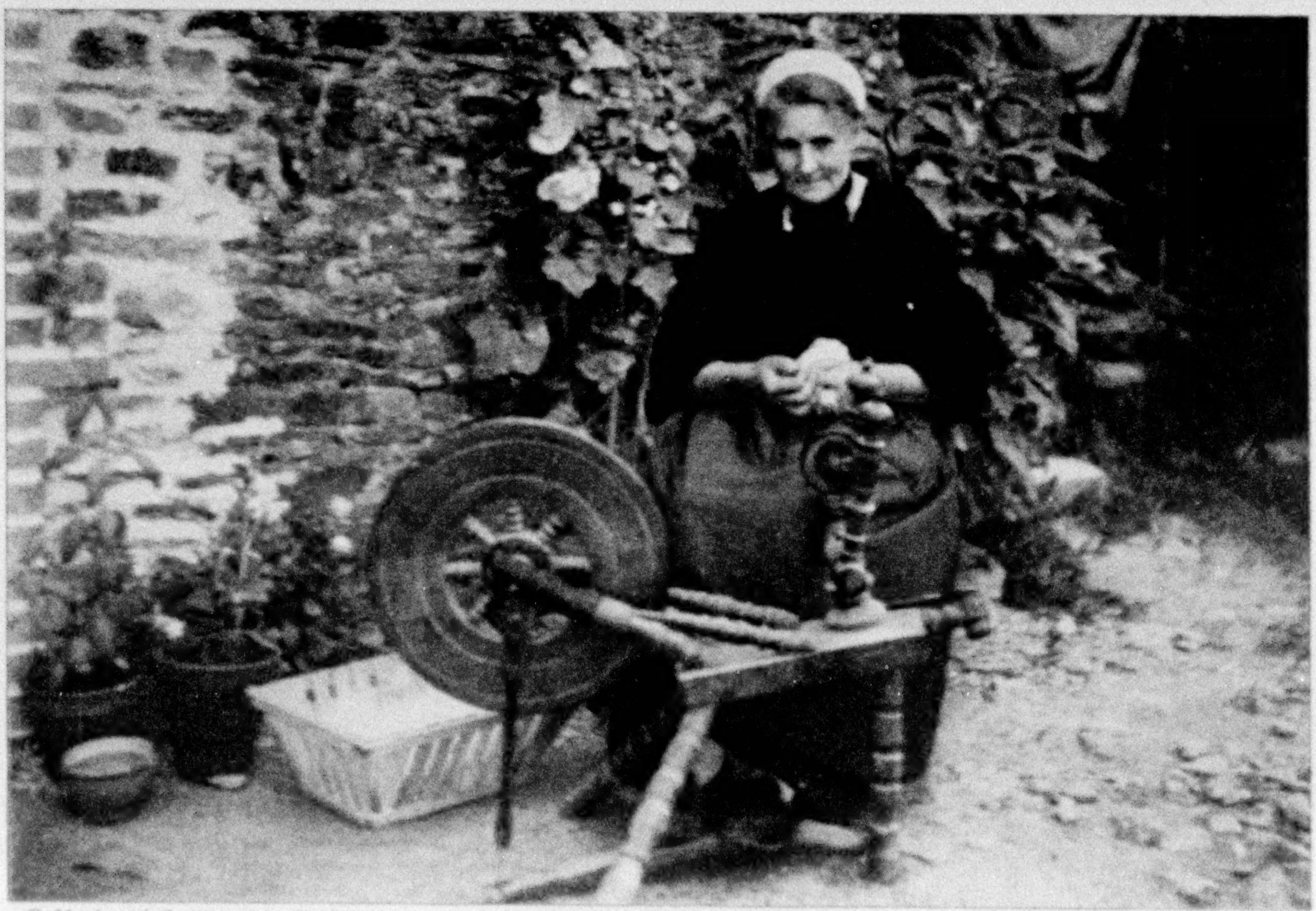
LEGEND SAYS THE CITY OF YS LIES BENEATH THESE WATERS

An ancient Celtic poem tells a story of King Gradlon, whose wicked daughter, Dahut, stole from his neck, as he slept, a golden key and, to please a lover, unlocked the gates of the dikes. The monarch awoke, leaped on his horse, and, putting the girl on his saddle, fled. But the voice of God commanded him to cast her to the mercy of the flood to expiate her sin. The Breton fisherfolk tell of hearing the bells of the submerged churches ringing wildly when storms are raging over Douarnenez Bay (see also Color Plate V). Lalo's opera "Le Roi d'Ys," is based on this tale.



A SAILOR FROM BREST VISITS AT PLOUGASTEL

Even the sprightly navy uniform cannot dim the glamour of the traditional hats and jackets worn by the villagers when the Pardon is celebrated.



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Autochromes by Gervais Courtellemont

OLD CUSTOMS LINGER IN THE MONTS D'ARRÉE NEIGHBORHOOD

Beside her flower-bordered cottage this farmer's wife spins wool on an ancient Breton wheel. She makes homespun to clothe the family.

on the evening of November 29. The tide had saved St. Malo, and the ship was aground. The blast broke all the windows and spoiled the Sunday suppers, but did not damage the ramparts. The city sent a characteristic war communiqué to the departing fleet, saying that only five shots had fallen in the city in three days, but that the noise of the infernal machine killed a cat with a weak heart!

In 1695 another Anglo-Dutch fleet of 70 ships battered the walls for four days. In June, 1758, Admiral Howe besieged the city for eight days, burned all the ships on the beach, and destroyed the convent and partly completed fort on the island of Cézembre. In September, reënforced with an army, he made another attempt. It ended 380 years of fighting to subdue St. Malo.

During the Boer War a sailor, imbued with ancient enmities and modern *vin rouge*, ran up a Boer flag. He was arrested. It was the last hostility.

THE WORLD'S GREATEST BUILDER OF FORTS

As the world's greatest builder of forts, Vauban must have felt his heart flutter when he stood on the watchtower of the Great Dungeon in 1689 and gazed over St. Malo, over its little rocky islands scattered offshore, and the projecting crags of the Breton coast. Throughout the centuries the local citizenry had built well, but the master engineer saw a dozen more building sites. He also extended the ramparts and planned the present port works of granite, which were to be completed in four years and to cost 4,500,000 francs, but which were finished in 150 years at a hundred times the estimate.

Vauban's great pupil, Garangeau, finished the last of the forts which the master planned. Three or four have been modernized and still bravely repulse photographers and wandering strangers whose unacademic French may brand them as "getting military information for an enemy power." Most of them are picturesque ruins, their garrisons limited to the Madelons serving drinks to perspiring tourists.

Jean IV, Duke of Brittany, did not tread on the toes of the belligerent Josselin de Rohan, bishop of St. Malo, when he put up Solidor Tower at St. Servan in 1382. Jean VI had worked up more courage 42 years later, when he started the Great Dungeon, almost on the walls of St. Malo. Solidor, three round towers welded together under one peaked roof (see illustration, page 157), across a little bay, but on the same side of the Rance River as St. Malo, was a defy, but more to collect tribute on the river boats.

Visitors who walk along the inner harbor to the twin city of St. Servan to-day climb the 104 steps to the top of Solidor and look for miles up a quiet tidal river which once carried commerce of France. The long, straight road connecting the two cities gives the wandering American a proud surprise with its signs, each reading: "Wilson Avenue" and, in smaller type, "Benefactor of Humanity, 1914-8."

Hikers on the high dike promenade pass the Épi de la Hoguette, where lovers and overheated losers from the near-by casino of Paramé cool and meditate on the little cluster of rocks which for years supported one of St. Malo's many scaffolds. The last ecclesiastic hanging on this group, now Fort National, was in 1685; the French Revolution's guillotine, reached by the "red stairway," was near the Dinan Gate in 1790; but the hangings, beheadings, shootings, drownings, and tossings over the ramparts which once were imposed by law have ceased to be open-air attractions.

A mile farther, past Fort Rochebonne, a private villa, is the Tower of Happiness, gift of a French citizen, near the abandoned Fort de la Varde. On clear days, from the tower, the island of Jersey and Cape Fréhel can be seen, immemorable boundaries to St. Malo's visible horizon. A sign on the low bench says: "Whoever sits on this bench for ten minutes will be happily married within a year. Dream! Meditate! Wish!"

AN OUTDOOR ART GALLERY

Rothéneuf, with its neglected and forgotten harbor and its weirdly carved cliff (see illustrations, pages 163, 164, and 165)), sleeps beyond.

Several miles farther across the little peninsula is Cancale, reached from St. Malo by a steam train which cruises through the main streets of all villages, leaving a broader trail of smoke than an

Photograph by John W. McFarlane

HIGH TIDE OR LOW, THE SEA IS THE MALOUIN'S LIVELIHOOD

When the water recedes from the harbor, leaving little pools among the rocks, many enterprising hucksters are busy catching snails, shrimps, and crabs to sell in St. Malo streets.

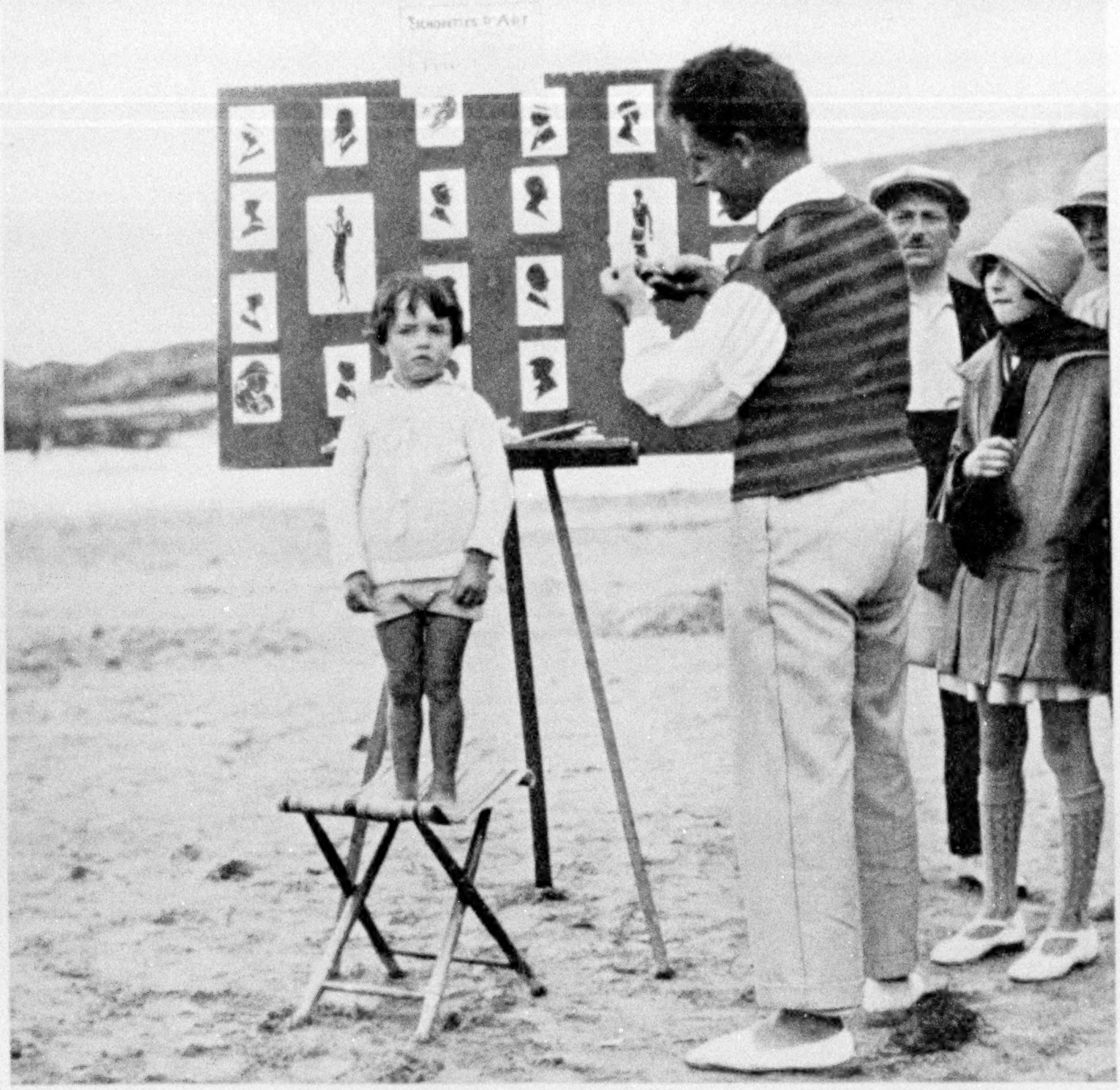
ocean liner and compelling passengers to shut themselves in with the age-old odors of fish, market baskets, and barnyard boots. Cancale claims fame from its oysters, but the oysters come from the nearby port, La Houle, and only the unknown hero who ate the first oyster could consider them famous.

La Houle, a row of tall houses on a single street, nestling between cliff and bay, shows the fenced-off squares of mud at low tide, where each family is said to have its herd of oysters.

According to rule, each year, on a day fixed by the Government, all the Cancale or La Houle oyster herders sail out to where the oysters are running wild. Each scoops up a boatload of bivalves, which he brings in and puts to bed in his private pasture, to be fed and fattened for exactly two years, and then eaten by city purchasers (see pages 160-161).

CHANGELESS THROUGH THE CENTURIES

Those who bargained and tricked in old St. Malo are gone, but what they built stands through the ages, as changeless as tides or setting sun. A high-wheeled cart, with a fat horse in the shafts, creaks off the beach with a load of the dripping seaweed which fertilizes the rocky Breton fields with iodine, soda, and lime. School



Photograph by John W. McFarlane

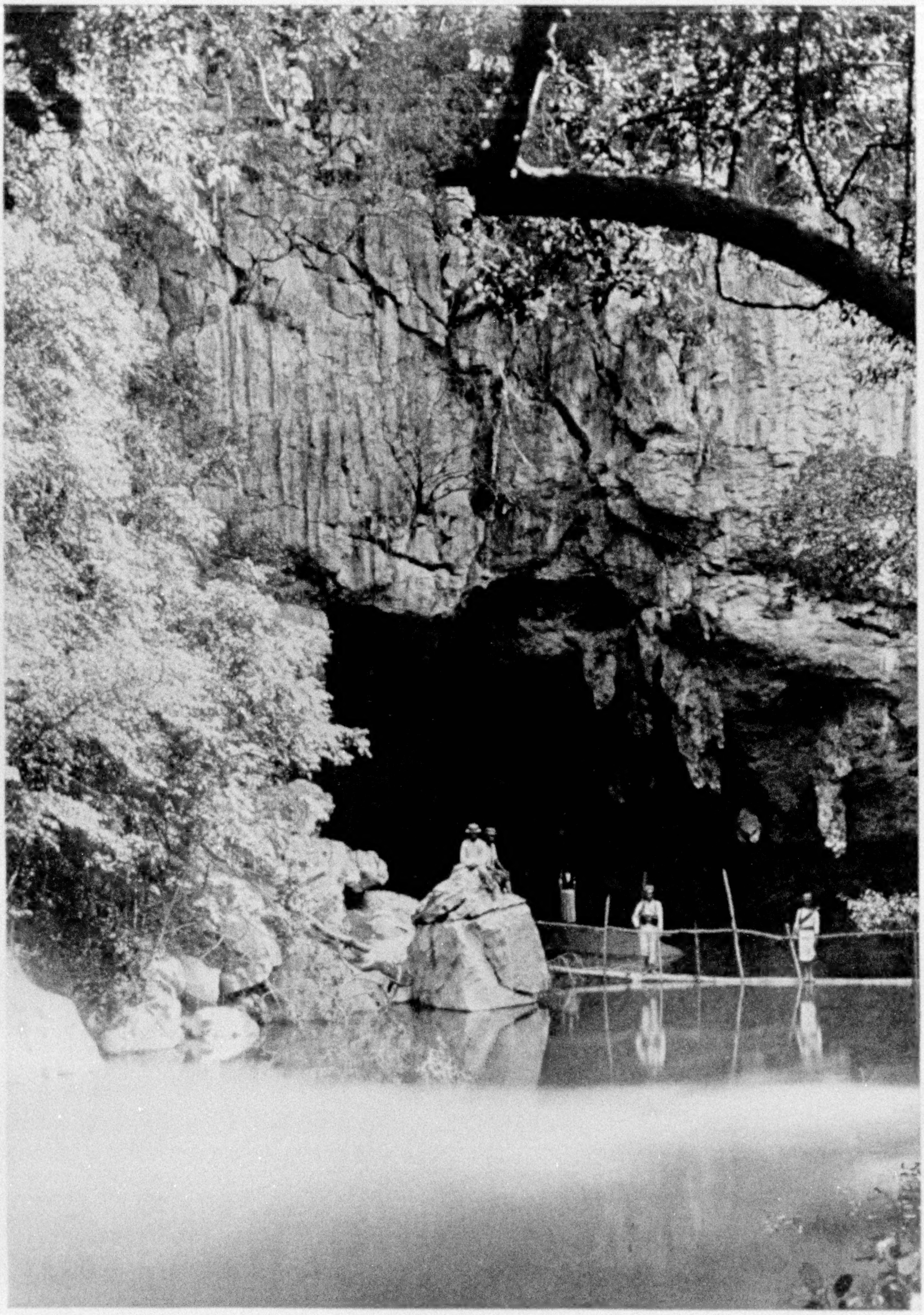
SILHOUETTE ARTISTS' SCISSORS HAVE REPLACED CORSAIR CUTLASSES

On the sands of St. Malo beach, once the gathering place of pirates, this clever Italian cuts black paper pictures of children and other visitors. Not even his prices are reminiscent of the robbers of the sea. He makes a likeness in 30 seconds and sells two for six cents.

children are marching home, marshaled by middle-aged women or priests. The last touch has been given to the fortresses of sand which will be gone to-morrow.

A woman in Breton costume passes—a little starched twist of lace for a cap, plush skirt, and lace-trimmed apron of brilliant green—a curiosity in to-day's monotony of style. Resorters are pulling down tents and rolling up tennis nets, for the tide is coming in apace, the sea again claiming its own.

A strip of sand shows white on Cézembre. Other little islands are black on a rolling, grasping, silvery sea, against a background of red. The fishing smacks are scudding for port and a hot meal. A plume of smoke floats from back of Petit-Bey Island, the Southampton steamer making out on the rising tide. The last rays of the sun dropping into the sea tip the steep roofs of slate, and the waves now are breaking against the walls, throwing spray high in the air, just as they started to batter these same walls 850 years ago.



Photograph courtesy French Colonial Office

THE RIVER ANKARANA GUSHES FROM A MOUNTAIN: MADAGASCAR

Much of France's great insular possession is rugged, and swift streams are abundant. Thus far, little has been done toward the development of power or irrigation projects, and only a few of the rivers can be used for navigation by light-draft steamers or even native canoes.

ACROSS MADAGASCAR BY BOAT, AUTO, RAILROAD, AND FILANZANA

By Charles F. Swingle

United States Department of Agriculture

With Photographs by the Author and by Prof. Henri Humbert

IT WAS the "Glorious Fourth," yet I was the only person within hundreds of miles to whom this meant anything other than the day after the third of July. Here I was, the first American botanist to set foot on the island of Madagascar, and not a single firecracker had I with which to impress the Malagash natives with the importance of the event.

But this was no time to dwell on thoughts of the homeland, for on this morning my companion, Prof. Henri Humbert, of the University of Algiers, and I were to leave Majunga, the west-coast "metropolis" of Madagascar, and start on a 1,300-mile plant hunt into the vast region to the south of the island.

There are no travel agencies in Madagascar. One simply moves when and where he can, and that leisurely. One day is as good as another to the Malagash, and to think of anyone's being in a rush is beyond his power of imagination.

Therefore it meant nothing to the easy-going natives of Majunga that our boat from France had landed us here just fifteen minutes too late to catch the little coastwise boat which we had hoped to take to Tuléar. Another mail-boat would leave in six weeks; so, according to Malagash philosophy, the situation wasn't hopeless at all. If we didn't care to wait, of course we must figure out other plans for ourselves.

Our figuring was complicated by the fact that I spoke almost no French and my companion no English. Thus, throughout the trip, we were often forced to employ German, Spanish, Malagash, and even Latin—languages strange and unfamiliar to us both, yet frequently clearer than either of our native tongues.

We found that by starting from Tananarive, the capital city, some 400 miles to the southeast of us, we could strike automobile roads leading on to the south. Thus our expedition, sponsored by the University of Algiers, the Arnold Arboretum, and the United States Department of Agriculture, could gain access to the great virgin region lying between Tuléar on the west coast and Fort Dauphin on the east (see map, page 184).

In this region, richly endowed yet grimly fortified by Nature, we hoped to make our real discoveries. The section was known to abound in valuable forms of vegetation, yet into much of it no plant collector had ever set foot. Was it any wonder that we were eager to see what was in store for us?

But getting to the capital city was by no means as simple as it sounded. We were en route six days. Three of these we spent, crowded and uncomfortable, aboard frail river craft, which meandered slowly up the brick-red waters of the Betsiboka to the nearest bus terminal (see page 194).

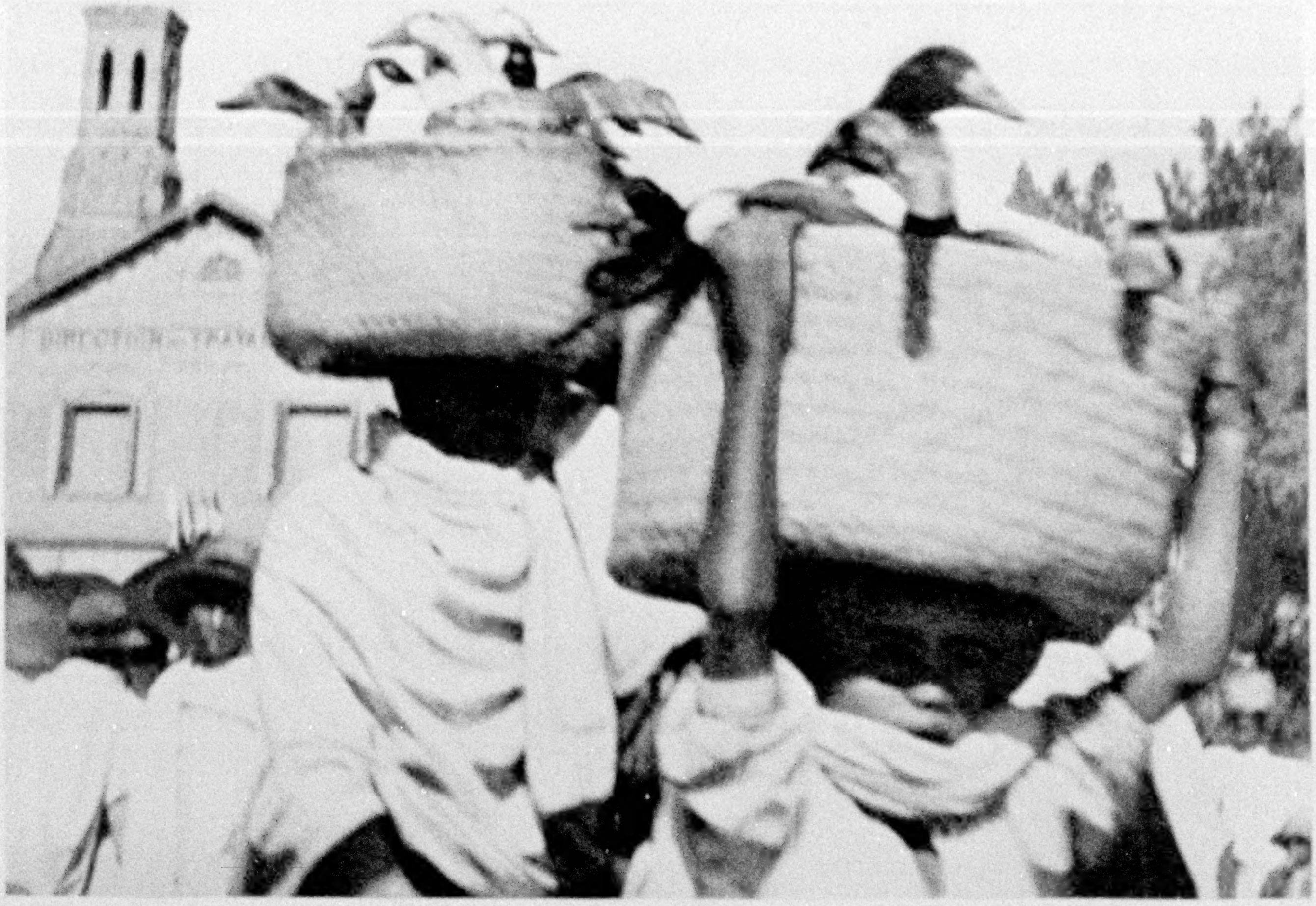
Throughout this part of our trip the best we could do was to trust that our tiny, overloaded boats would not be wrecked on one of the numerous snags in the river, for the water all along was teeming with crocodiles, ranging from cunning little fellows a couple of feet long to monsters of 16 or 18 feet.

The next three days by bus were scarcely less fatiguing than the water trip and equally interesting. The natives still looked upon this bus with a combination of wonder and fear. The driver had only to sound his horn to send frightened pedestrians scurrying in every direction. Once out of harm's way, they would swing around and join in a whole-hearted laugh.

THE TRAVELER'S TREE A BOON TO THE THIRSTY

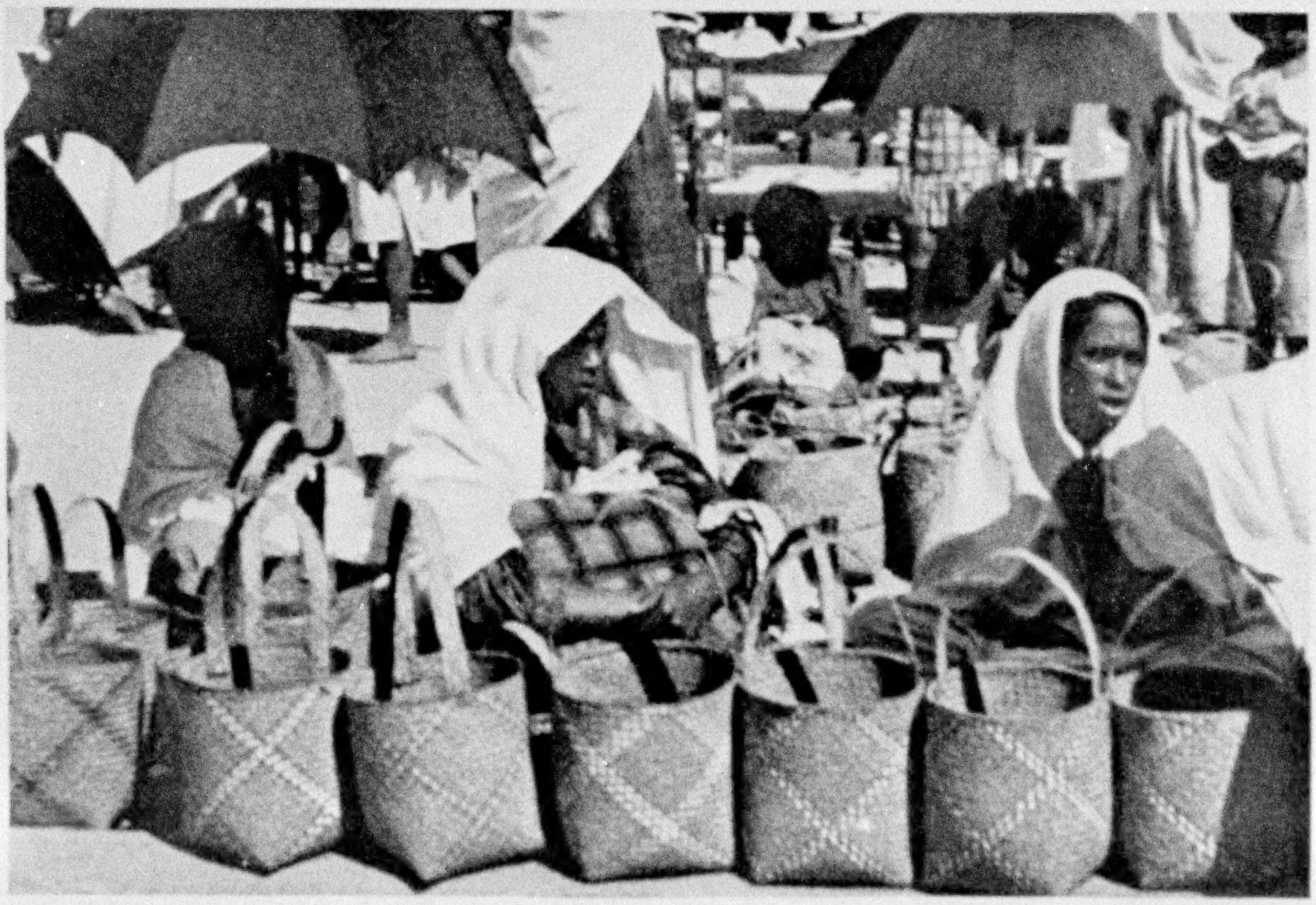
Our way lay through mountainous country. The hills, once covered by splendid forests, were now brown and barren save where grass had sprung up, as if attempting to hide the all-too-evident traces of the destruction wrought by man.

The desolation of the mountains was relieved by numerous stream valleys, where



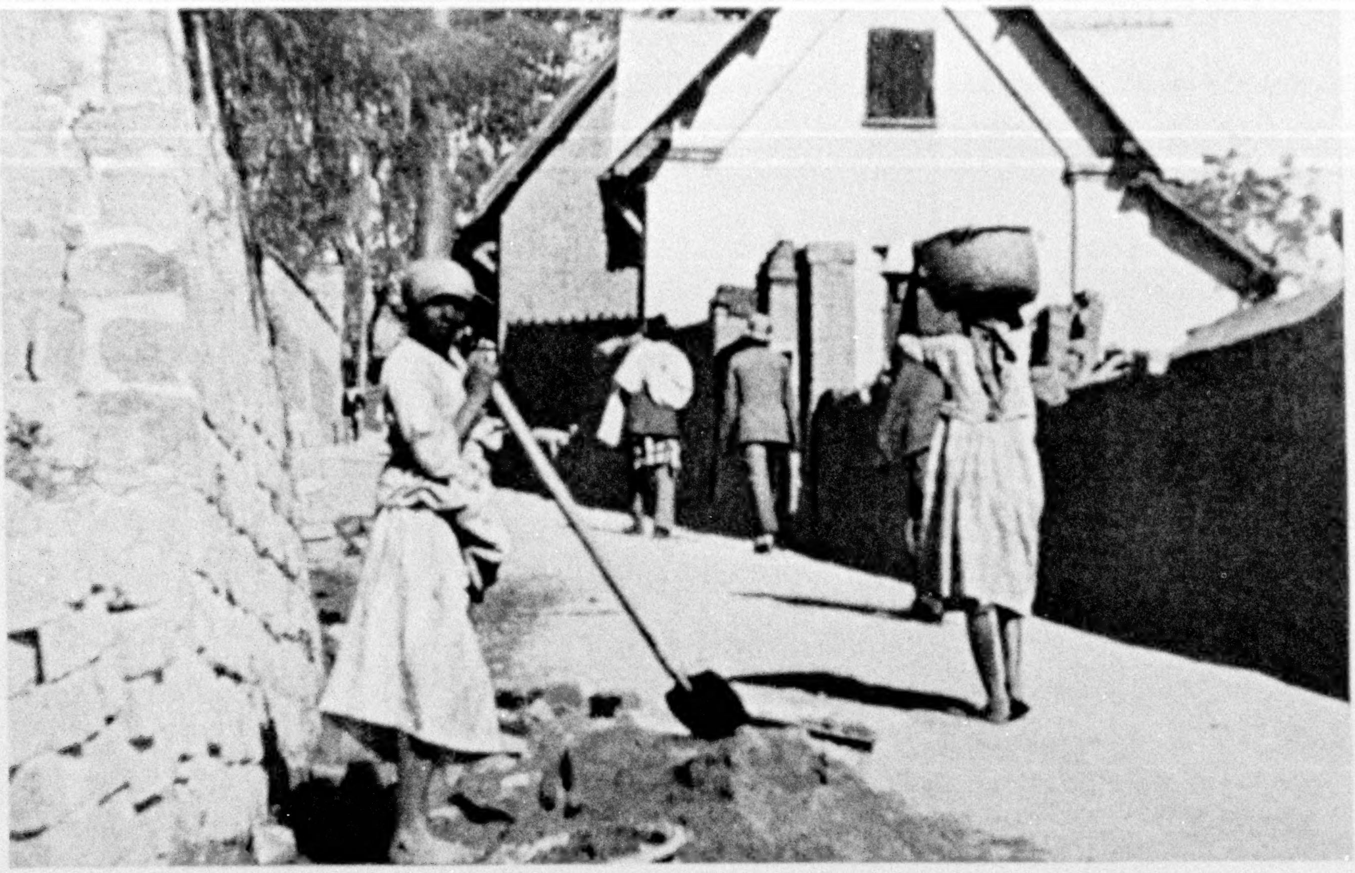
TO MARKET, TO MARKET

Whatever they have to sell—it may be only a goose, a few eggs, or a bit of wood—the Malagash natives carry on their heads.



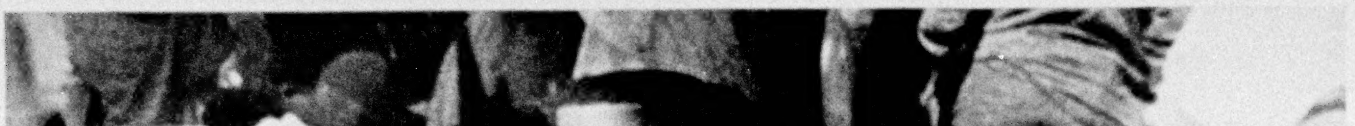
WHERE BASKETRY IS A FINE ART

In the basket corner of the market at Tananarive the author procured a collection of 24 specimens, made to fit together like a set of mixing bowls, the diameter of the largest being 5 inches.



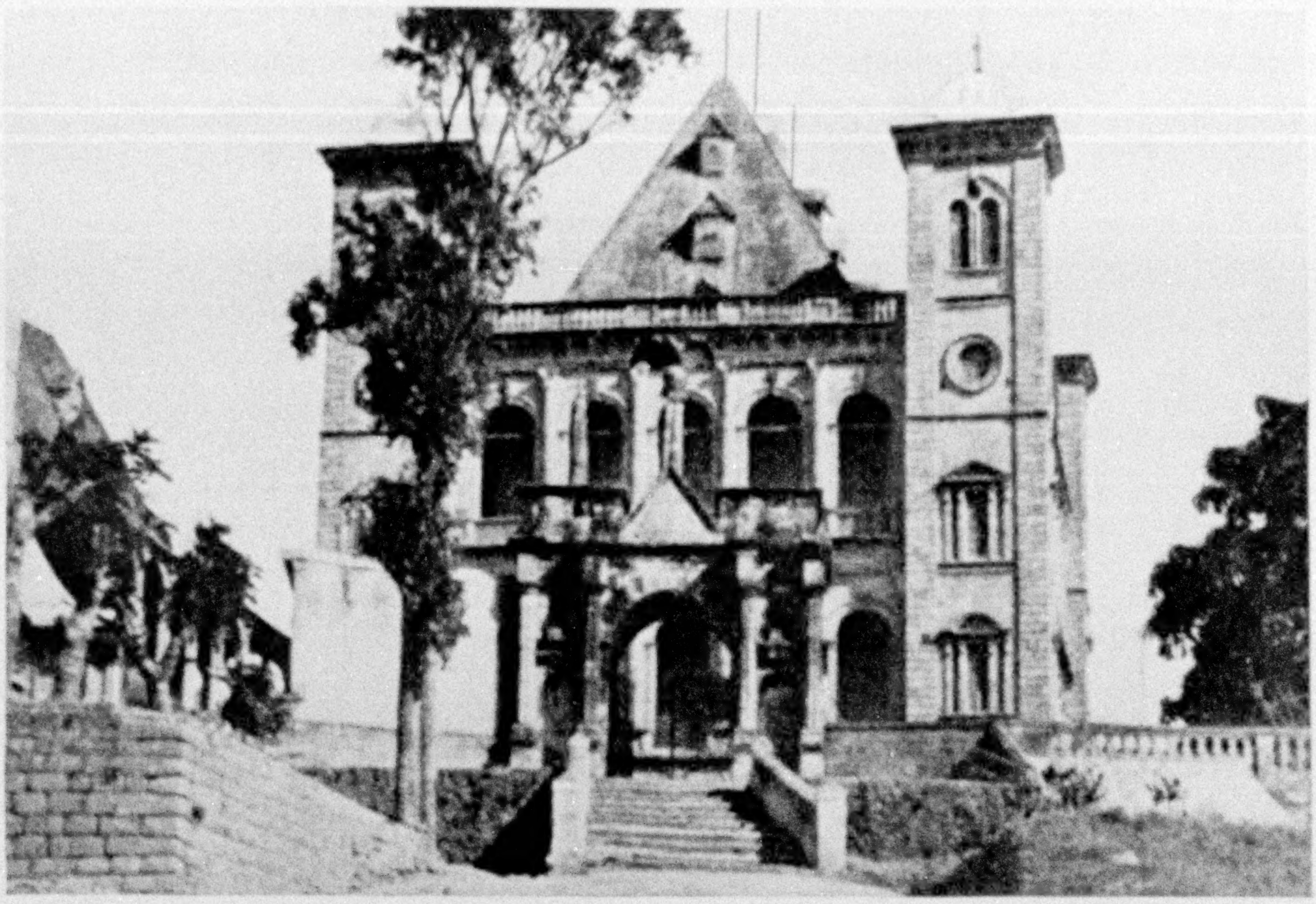
MORTAR MIXING IS UNUSUAL WORK FOR NATIVE WOMEN

For the most part, heavy manual labor is done by men in Madagascar, and a scene like this is rare (see text, page 186).



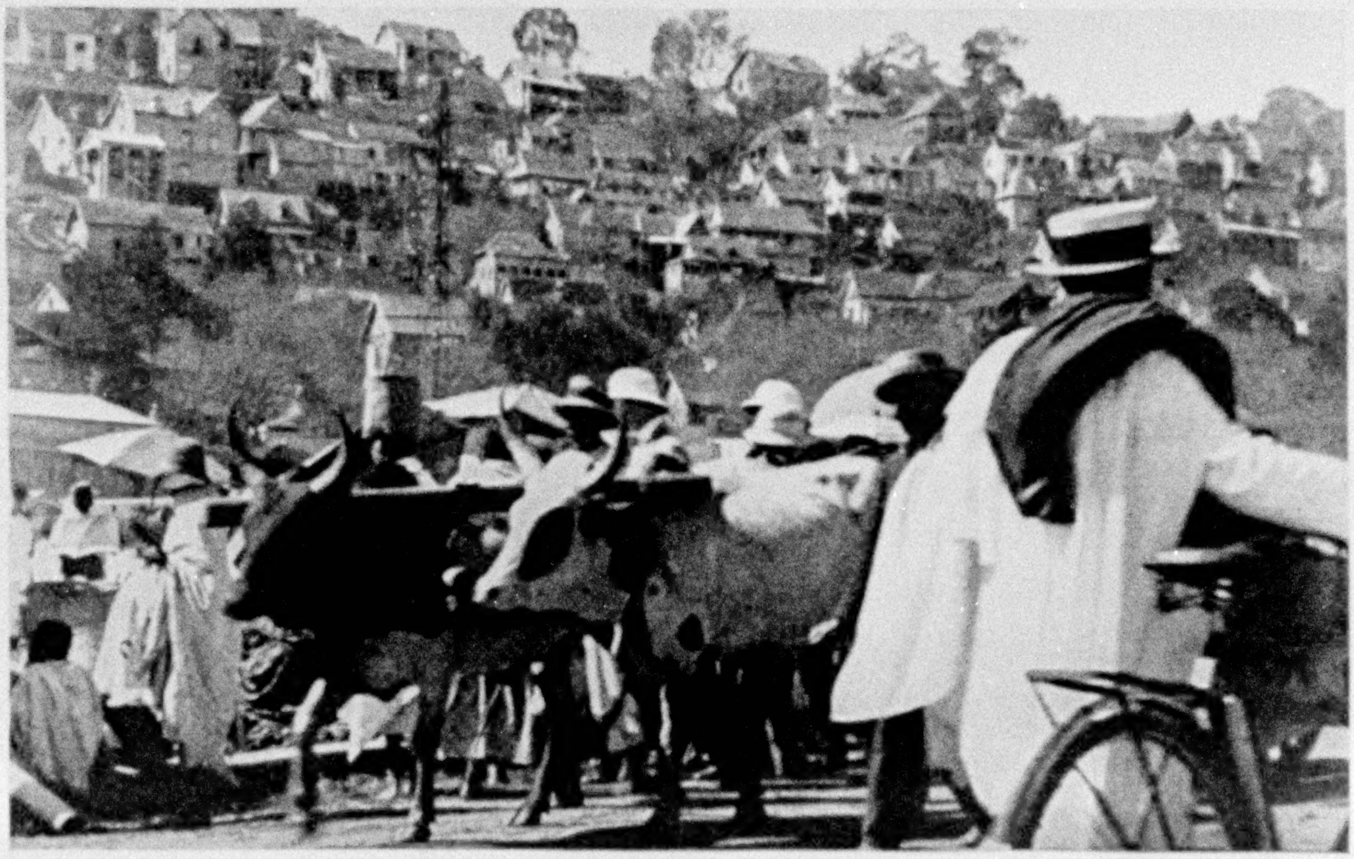
THOUGH THE MALAGASH USES NO FURNITURE, HE MAKES IT

Grass chairs, tables, and other pieces are on display in the market, but the native usually supplies his home with nothing but hand-woven mats (see illustration, page 187).



THE EXILED QUEEN'S PALACE HOUSES THE ACADÉMIE MALGACHE

In the days before the last native ruler, Ranavalona III, relinquished the throne to take up her residence in Algeria, this imposing edifice in Tananarive was the seat of government. Now it is used principally as a museum of Malagash relics.



PRIMITIVE AND MODERN CONVEYANCES "RUB FENDERS" IN TANANARIVE

Bicycles, motorcycles, and automobiles must thread their way among oxcarts and filanzanas in the streets of the Madagascar capital, with its 70,000 inhabitants, metropolis of a growing colony larger than France itself.

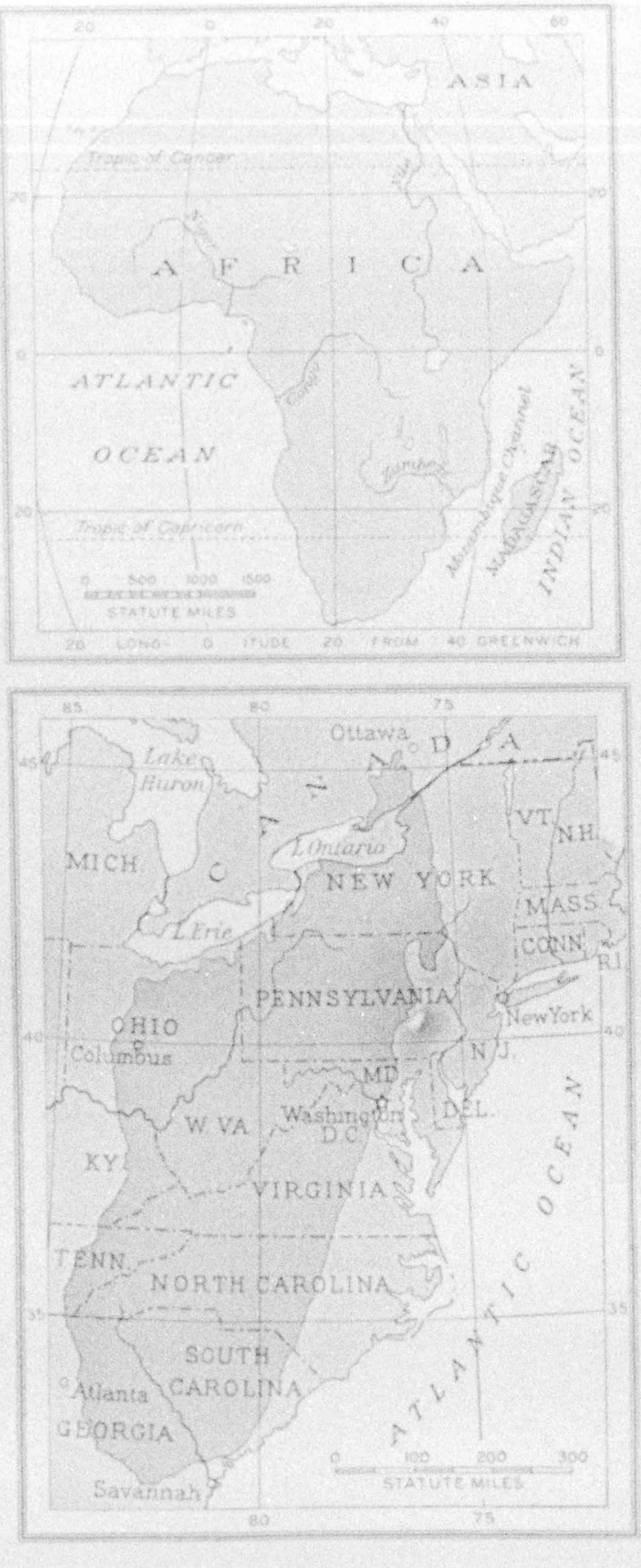
rice, the principal article of food for the Malagash, was being grown; also, in these lower altitudes, we saw many of the famous Ravenala, or traveler's tree, also known as the traveler's palm (see illustration, page 204).

I often saw the natives using the heavy broad leaves of this tree as plates from which they ate their rice. I, too, tried them before leaving Madagascar, and found them to be an excellent substitute for Haviland. My curiosity also led me to investigate the story which gives this tree its name. I found that, except in cases where insects had entered and contaminated the liquid, each hollow leaf base of this tree actually does contain from a pint to a quart of really good "distilled" water, moisture from the air having condensed on the broad surface of the leaf and run down the stem into a little reservoir at its base. Thus, as the story goes, this tree brings joy to the weary traveler, for here an ever-ready supply of fresh, cool water awaits him.

It was on this overland trip that I saw my first swarm of locusts. Strange that one born and reared in Kansas, the "grasshopper" State, should need to come all the way to Madagascar for this! It was a real swarm indeed, blackening the sky, and it took several hours for this dark cloud to pass.

I had been told that locusts were greatly esteemed by the natives for food, and a little later, at the big public market in Tananarive, I saw scores of bushels of these choice viands on sale.

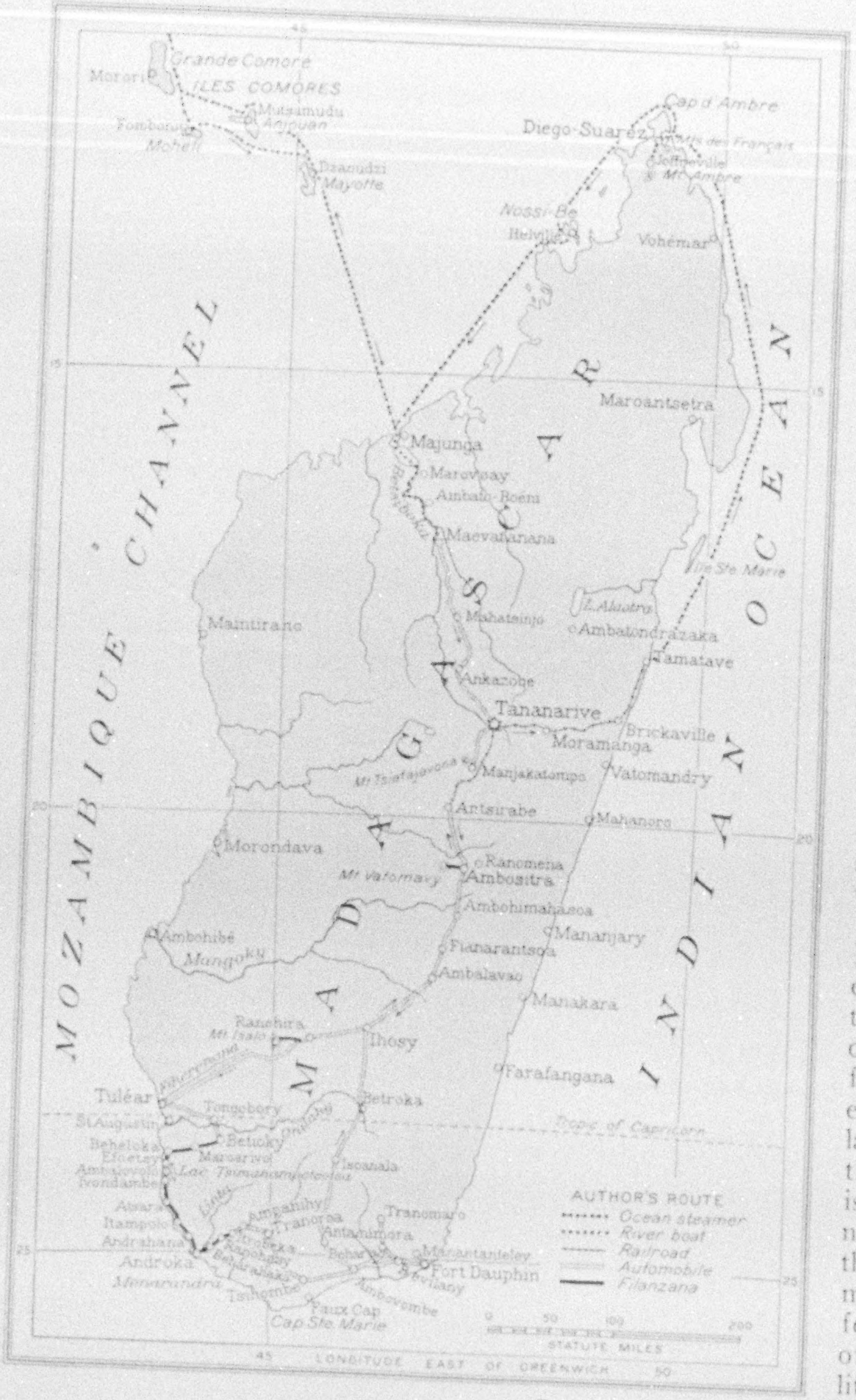
Few cities in the world with a population of more than 70,000 are as untouched by the tourist as is Tananarive. Though many changes have come about in Madagascar since the French occupation of the island, in 1895, the people of the capital, housed in their simple dwellings, are living much as they always have lived. Radio towers are the only visible sign that this civilization is linked with any other. Except for these, it is not at all hard to believe oneself in another world.


ASIA
AFRICA
Tropic of Cancer
Tropic of Capricorn
Nile
Niger
Congo
Zambezi
ATLANTIC OCEAN
INDIAN OCEAN
Mozambique Channel
MADAGASCAR
0 500 1000 1500
STATUTE MILES
20 LONG- 0 ITUDE 20 FROM 40 GREENWICH
Ottawa
Lake Huron
L. Ontario
L. Erie
MICH.
NEW YORK
VT.
N.H.
MASS.
CONN.
R.I.
PENNSYLVANIA
New York
N.J.
OHIO
Columbus
MD.
DEL.
W. VA.
Washington D.C.
KY.
VIRGINIA
TENN.
NORTH CAROLINA
SOUTH CAROLINA
Atlanta
GEORGIA
Savannah
ATLANTIC OCEAN
0 100 200 300
STATUTE MILES

MADAGASCAR IN ITS RELATION TO AFRICA (ABOVE) AND COMPARED WITH OUR EASTERN STATES (BELOW)

Only four islands of the earth are larger than Madagascar—Greenland, New Guinea, Borneo, and Baffin. If superimposed upon the United States, it would extend from Ottawa, Canada, to Savannah, Georgia. It equals in area all of the New England and Middle Atlantic States, with Virginia, Maryland, and Delaware added.

Tiny dwellings of unburned brick dot the hillsides of the capital. Occasionally one sees a wooden structure, or one built of stone, and often a two-story edifice looms above its neighbors. Dominating all, the "Palace of the Queen" towers magnificently on a lofty hilltop in the center of the city. This building, since the exile of Madagascar's last native ruler,


Grande Comore
ILES COMORES
Moroni
Mutsamudu
Anjouan
Fomboni
Moheli
Dzaoudzi
Mayotte
Cap d'Ambre
Diego-Suarez
Joffreville
Mt Ambre
Nossi-Be
Hellville
Vohemar
MOZAMBIQUE CHANNEL
MADAGASCAR
INDIAN OCEAN
Maroantsetra
Majunga
Marovoay
Ambato-Boeni
Maevatanana
Ile Ste Marie
L. Alaotra
Ambatondrazaka
Tamatave
Maintirano
Ankazobe
Tananarive
Brickaville
Moramanga
Vatomandry
Mt Tsiafajavona
Manjakatompo
Antsirabe
Mahanoro
Morondava
Ranomena
Mt Vatomavy
Ambositra
Ambohimahasoa
Mananjary
Ambohibé
Mangoky
Fianarantsoa
Ambalavao
Manakara
Ranohira
Mt Isalo
Ihosy
Farafangana
Tuléar
Tongobory
Betroka
St Augustin
Onilahy
Tropic of Capricorn
Beheloka
Efoetsy
Betioky
Maroarivo
Ambolovolo
Lac Tsimanampetsotsa
Isoanala
Itondambe
Linta
Ampanihy
Tranomaro
Tranoroa
Antanimora
Itampolo
Andrahana
Androka
Manambovo
Menarandra
Tsihombe
Faux Cap
Cap Ste Marie
Ambovombe
Fort Dauphin
Behara
Manantenteley
Sevilany
AUTHOR'S ROUTE
Ocean steamer
River boat
Railroad
Automobile
Filanzana
0 50 100 200
STATUTE MILES
LONGITUDE EAST OF GREENWICH
45
50
15
20
25

Drawn by A. H. Bumstead

THE AUTHOR'S ROUTE AND HIS MEANS OF TRAVEL IN MADAGASCAR

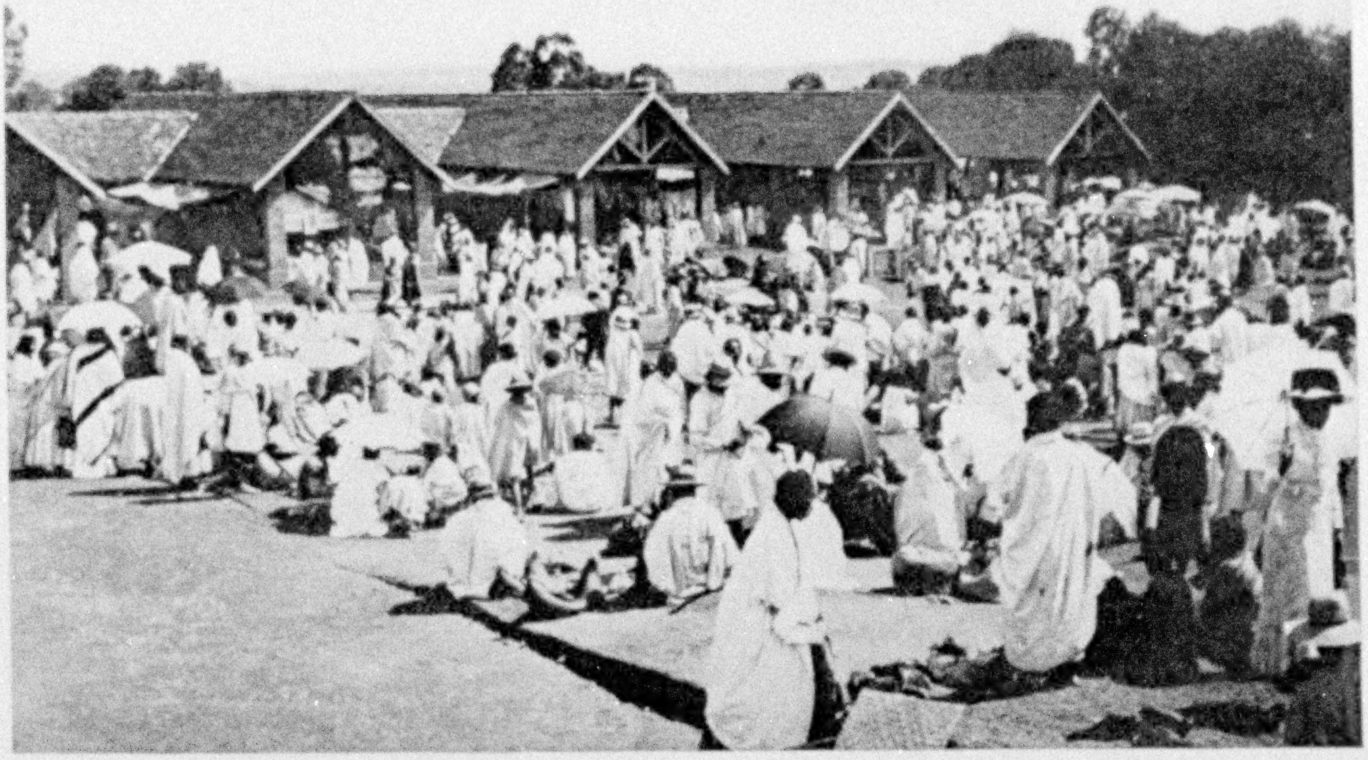
Although the botanist finds much of interest in any part of Madagascar, it was in the desert region lying between Tuléar and Fort Dauphin that this expedition made its chief discoveries. Into much of this region no plant collector had ever before set foot.

Queen Ranavalona III, has been used as a national museum, and it houses many valuable relics of the Malagash people.

Here we had a fine opportunity to study the customs and history of these handsome, straight-haired, brown-skinned people of mysterious origin. The Malagash are considered to be Malayo-Melanesians, probably coming from the island of Sumatra; yet, so far back as history goes, they have been loath to venture far from land in their frail canoes. How they managed to transport themselves for thousands of miles, across the Indian Ocean, to their present island home is an interesting puzzle. Equally interesting is the fact that, although Madagascar lies only 240 miles off the east coast of Africa, the natives show little mixture with African blood.

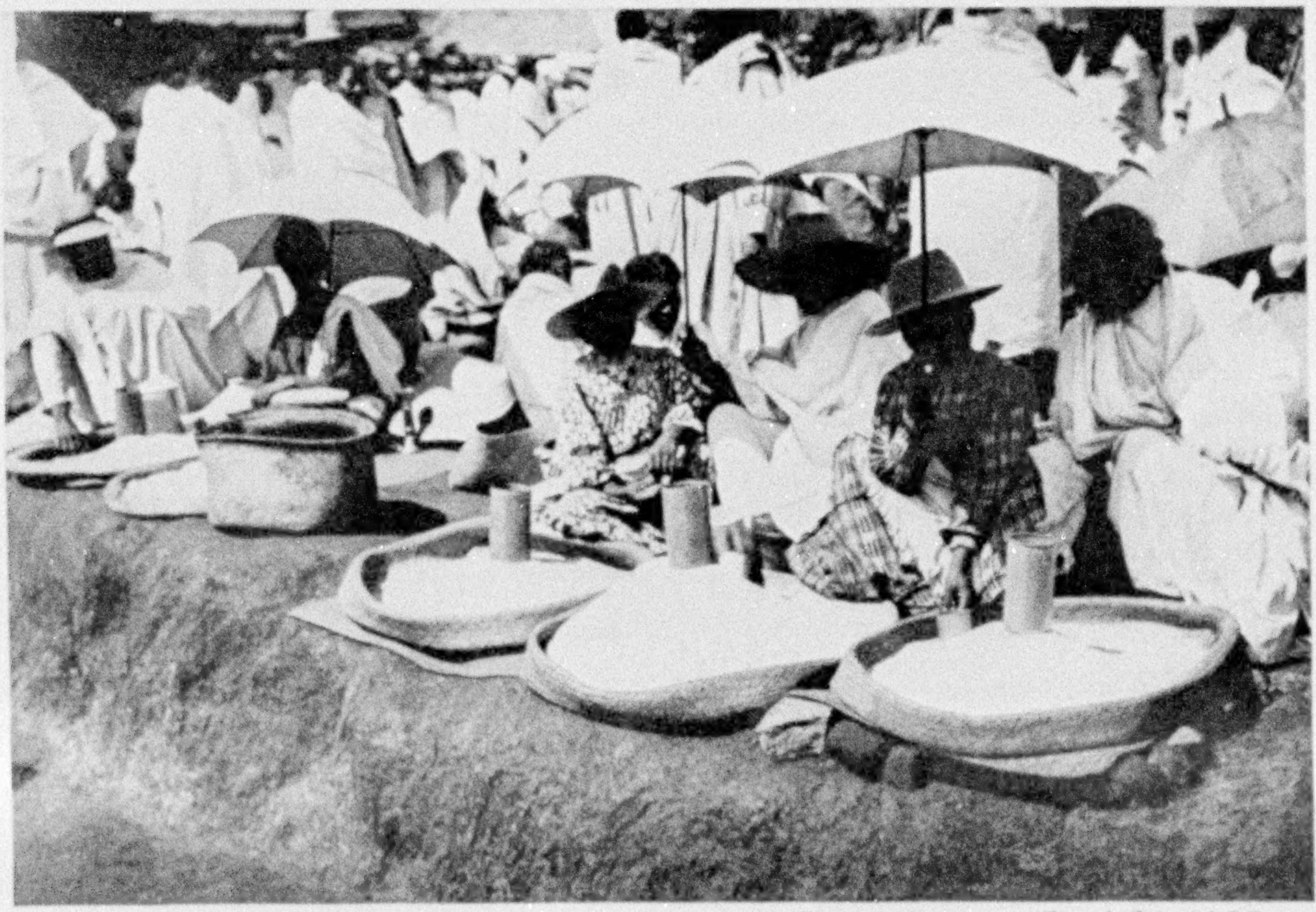
The language of the Malagash is the clearest indication that their ancestors were of common origin; for, save for differences in dialect, the language is uniform throughout the entire island. This is significant, considering that its peoples are made up of many different tribes, one part of the island having little contact with another. It was only after the advent of the Christian missionaries, a hundred years ago, that this language was written down and put into the phonetic form now in use.

When one enters a one-room Malagash home, stooping low in order to get through the tiny doorway, he sees little in the way of furniture. A large mat on the floor, a fireplace with no outlet for the smoke, a



THRONGS COME TO THE MARKET AT FIANARANTSOA

The *zoma* (Malagash for both shopping center and Friday, the day of trade) is always the most popular place in a Madagascar town. Here all manner of merchandise is bought and sold, and cast-off European finery is eagerly sought, as the woman in the extreme right foreground bears witness (see text, page 187).



Photographs courtesy French Colonial Office

RICE IS THE STAPLE FOOD FOR MOST OF THE MALAGASH

Merchants squatting on the ground in the market at Fianarantsoa sell great quantities of this indispensable cereal. Madagascar is a land of plenty. The standard ration for a workingman, two pounds of the dry grain a day, is frequently consumed at a single meal (see page 196).

XUM

Photograph courtesy French Colonial Office

FIANARANTSOA HAS ITS CATHEDRAL

When the French occupied Madagascar in 1895, they found 20 Christian churches in Tananarive alone and several in this city. English, Norwegians, and Americans played an important rôle in civilizing the country. To-day religious activities are being taken over more and more by workers from France, and education is handled by the island government, but 29 families of missionaries from the United States are still stationed in the extreme south (see text, page 208).

few baskets of rice, a huge iron pot for cooking it, one or two earthen jugs or large calabashes for water, and the Malagash home is complete—or almost so. Of course, to be really fashionable, it must have a few good-luck charms and beautiful cast-off trinkets about. Nor must I fail to mention the sooty cobwebs which, hanging in festoons from the ceiling, give the place its air of permanence.

The woman in Madagascar ranks high. This may be due partly to the fact that for many years preceding the French occupation, the island was ruled almost continuously by native queens. In any case, the lot of woman here is much the same as if she had been born to less primitive surroundings. Of course, she must daily husk and cook the family rice, carry wood and water for her household, and do the marketing for the family, but one rarely sees her doing man's work.

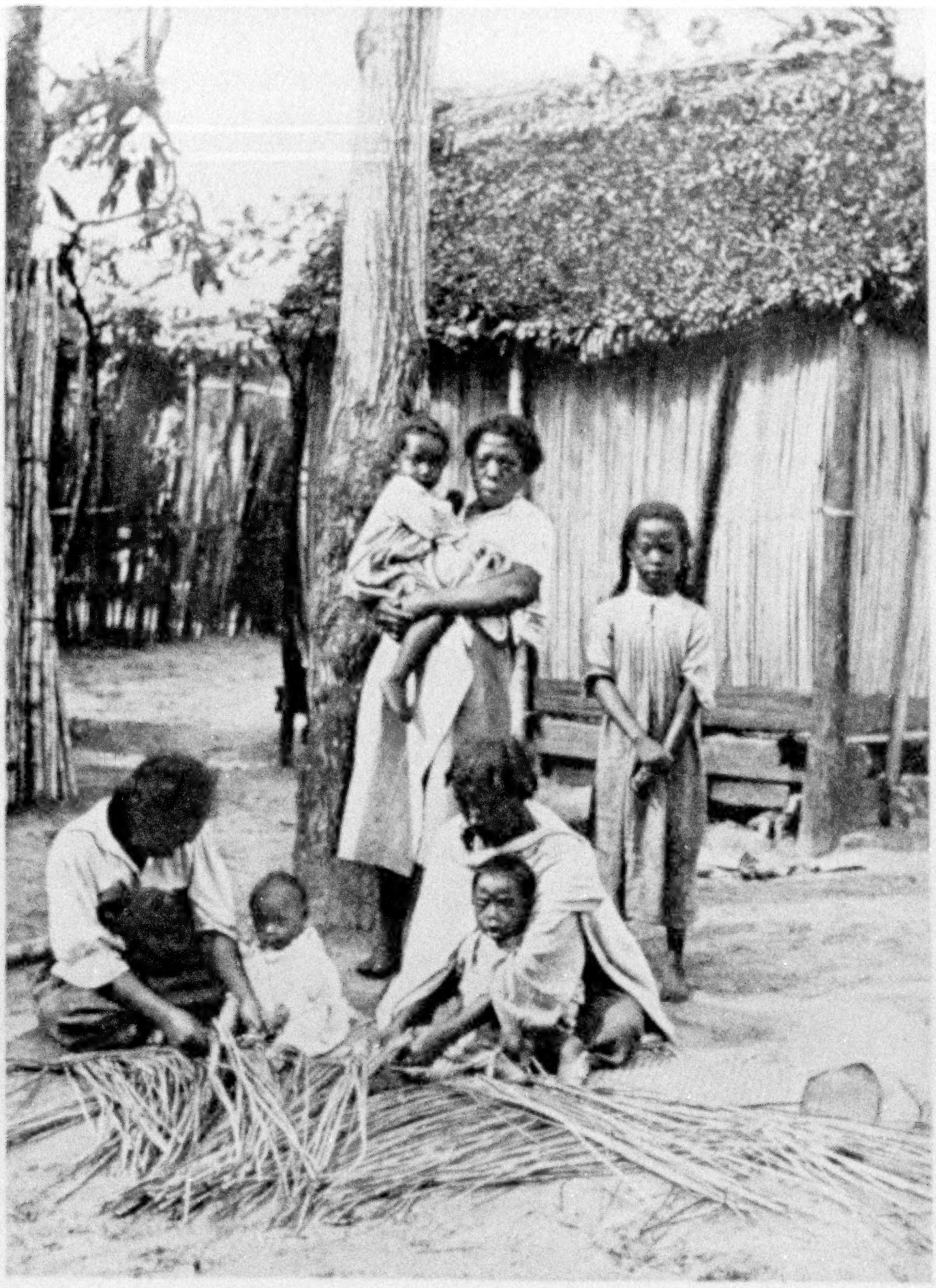
I do not mean to imply that the men of Madagascar are in any sense "henpecked." The struggle for existence seems to have passed by this island entirely. A few days' work planting, transplanting, and harvesting rice, and food is available for all throughout the year. One could almost say that the chief occupation of the men is tending and stealing cattle.

MADAGASCAR'S CHIEF PRIDE IS ITS CATTLE

Madagascar boasts that it has more cattle per capita than any other country in the world, and far more important to the native than a bank account, a bag of jewels, or a fine home is his herd of humpback zebus; for these bespeak his wealth and influence as nothing else could. He would much prefer to let his wife and children go hungry than to sell one of his precious herd. To kill a beef for food is unthinkable, and it is only at taxpaying time that he is forced to slaughter some of his animals and sell their hides to obtain cash.

Since cattle are the one sure sign of social prominence, they are to be obtained at all hazards. And here, to a large extent, lies the origin of the frequent statements that the Malagash are a thieving race. In all my travels in Madagascar our party did not once lose a single article by theft. However, no Malagash can call himself a man who cannot boast of the cattle he has stolen. In the eyes of the natives, cattle-stealing is not a crime, but the highest type of sport.

From my observations, I should say that cattle-stealing in Madagascar ranks along with football in this country. Among the natives it bears no more relation to the struggle for existence than does our popular sport, nor is it to be considered as any more dangerous.



Photograph courtesy French Colonial Office

CARPET WEAVING

In every house there is a covering of coarse matting over the earth floor. Such mats are often the only semblance of a bed the family possesses. Household furniture is reduced to bare essentials (see text, pages 184-186).

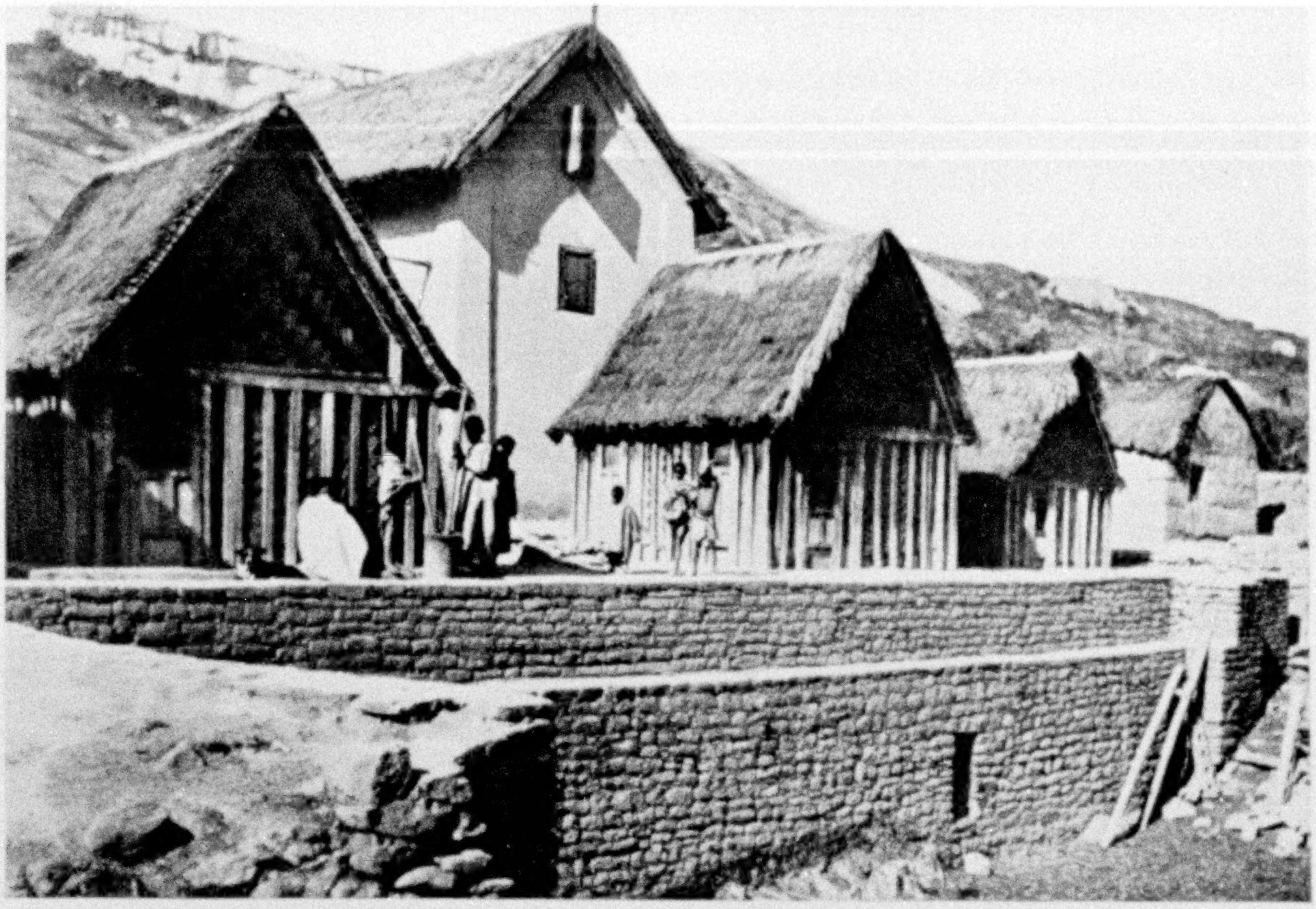
LOCUSTS AND EMPTY BOTTLES ARE MERCHANDISE IN MADAGASCAR

The *zoma*, or market, at Tananarive is one of the most interesting sights in Madagascar. On market day, in from the country stream the natives, walking for miles, bringing their wares with them, balancing their loads upon their heads—baskets of eggs and rice, piles of bright-colored mats, live chickens and geese.

Though market day is quite a festive occasion, the native wears only his ordinary clothes here. His everyday *lamba* is made of unbleached muslin, and, wrapped in it, he looks as if he were on his way to a Halloween celebration.

Though the word *lamba* is usually translated as shawl, it means much more than this to the Malagash. It serves as a blanket at night and does duty as a spine pad when the owner is doing heavy work. Occasionally it is used as a net for catching locusts.

For really festive occasions, such as a funeral or a marriage, the natives have a gay shawl, often made of a Madagascar silk. But, no matter how decorative his attire, the Malagash feels that he is not really well dressed without a modern touch of some sort. In their process of becoming civilized, the natives are not merely changing the old for the new, but are adding the new to the old with amaz-



Photograph courtesy French Colonial Office

OLD AND NEW MINGLE IN A BETSILEO VILLAGE

Though many of the houses of this central Madagascar town are substantially built and rather modern in appearance, none have chimneys; and at meal time, when smoke pours out through doors, windows, and grass roofs, they appear to be burning down. The women at work before the dwelling on the left are husking, with a large wooden mortar and pestles, the daily supply of rice for the family.

ing results. At one of our first stops in Madagascar we had been greeted by a native wearing an ankle-length nightshirt and a silk stovepipe hat!

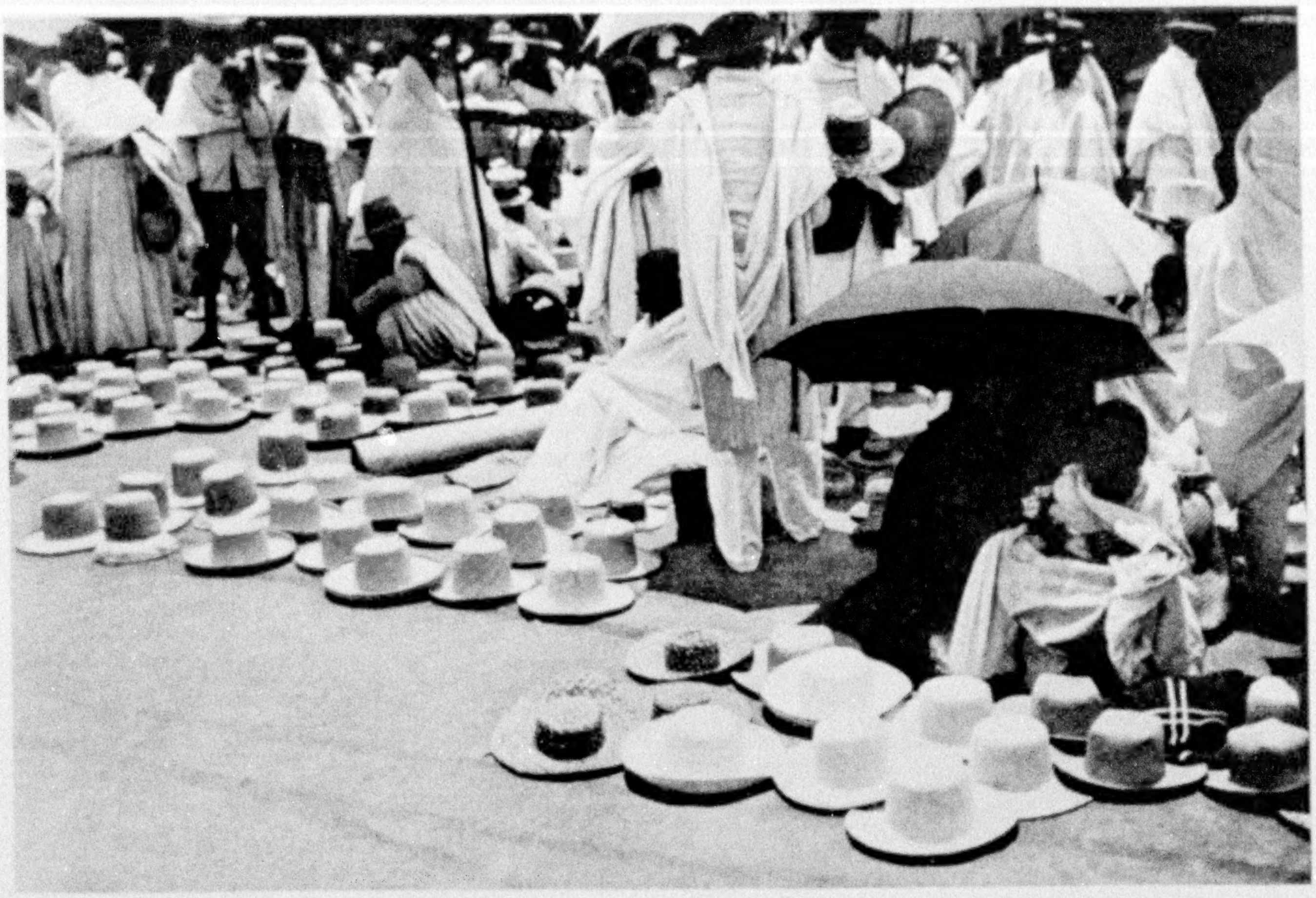
At the Tananarive market I was able to buy few of the articles which civilization had taught me to depend upon. However, I saw a myriad of things which bring joy and delight to the Malagash—piles of wearing apparel of a forgotten European style, strange and doubtful native medicines, baskets of locusts, empty bottles, and tin cans.

It must not be inferred that I found nothing on sale here that I could use, for Tananarive is no exception to the rule that hotel accommodations in Madagascar range from *very bad* on down. Hence I made daily trips to the market to procure peanuts, bananas, pineapples, guavas, loquats, mangoes, oranges, and papayas with which to supplement our hotel diet.

I was told that the Malagash language has in it no word for time; a glimpse at the market tends to confirm this. Here the native, after spending a day or so walking to town, is content to sit waiting several days for a customer to buy the armful of wood or the chicken he has brought to market. Once in possession of the few cents his goods have sold for, he carefully selects a prize from the many lots of clothing or trinkets on display and happily wends his way homeward, feeling very grand in the derby hat, the overcoat, or other bit of finery he has purchased.

Most of our time in the capital was spent in arranging with colonial officials for our trip into the south. We planned to make an overland journey, gathering whatever interesting plants we might find en route to Tuléar. Our course into the wild desert regions which lay beyond Tuléar we left to our imaginations for the time being.

I doubt if the finest *de luxe* train in the world ever carried more appreciative passengers than did the tiny wood-burning,



Photograph courtesy French Colonial Office

HATS OCCUPY MUCH SPACE IN FIANARANTSOA MARKET

To the native, head coverings are important as both wearing apparel and dishes (see text, page 197), but those with brims are more or less of a luxury. The poorer class usually have only boxlike hats, and not always these. "Fianar," as this city is commonly called, is the second largest inland town in Madagascar, being exceeded by Tananarive alone. It is the pride of the Betsileos (see illustration, page 190).

narrow-gauge railway train on which we rolled out of Tananarive. This was our first train ride in Madagascar and the last we would have until our return from the south. So our trip was all too short—only a few hours before we reached the end of the line.

ANTSIRABE IS MADAGASCAR'S HEALTH RESORT

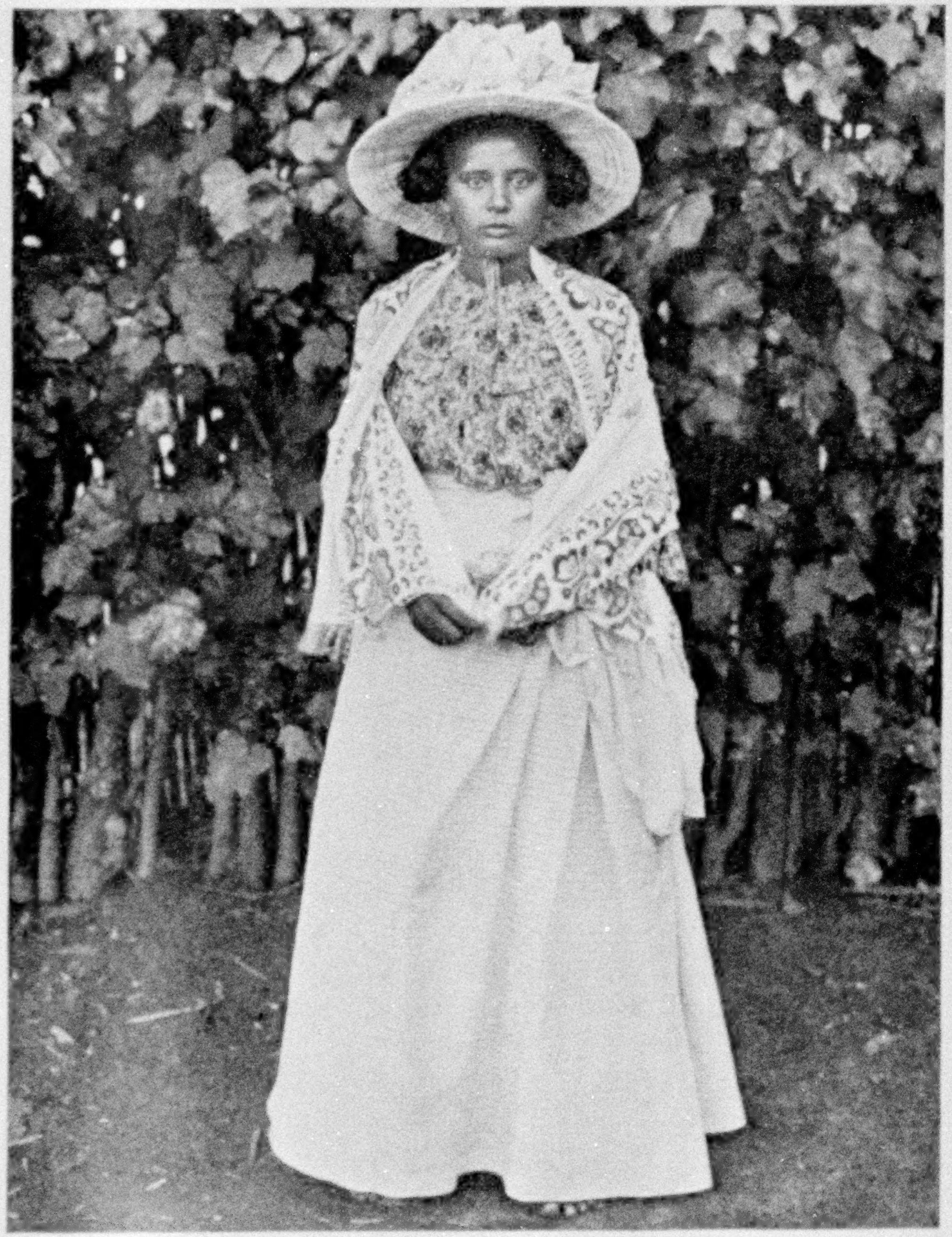
In striking contrast to Tananarive was the modern French city of Antsirabe, in which we alighted. We were indeed in the Vichy of Madagascar, the health resort of the island, where some of the finest curative hot springs in the world are to be found. It was hard to believe that this city, with its fine homes and its well-planned streets and parks, was actually a part of the Madagascar in which we had been traveling.

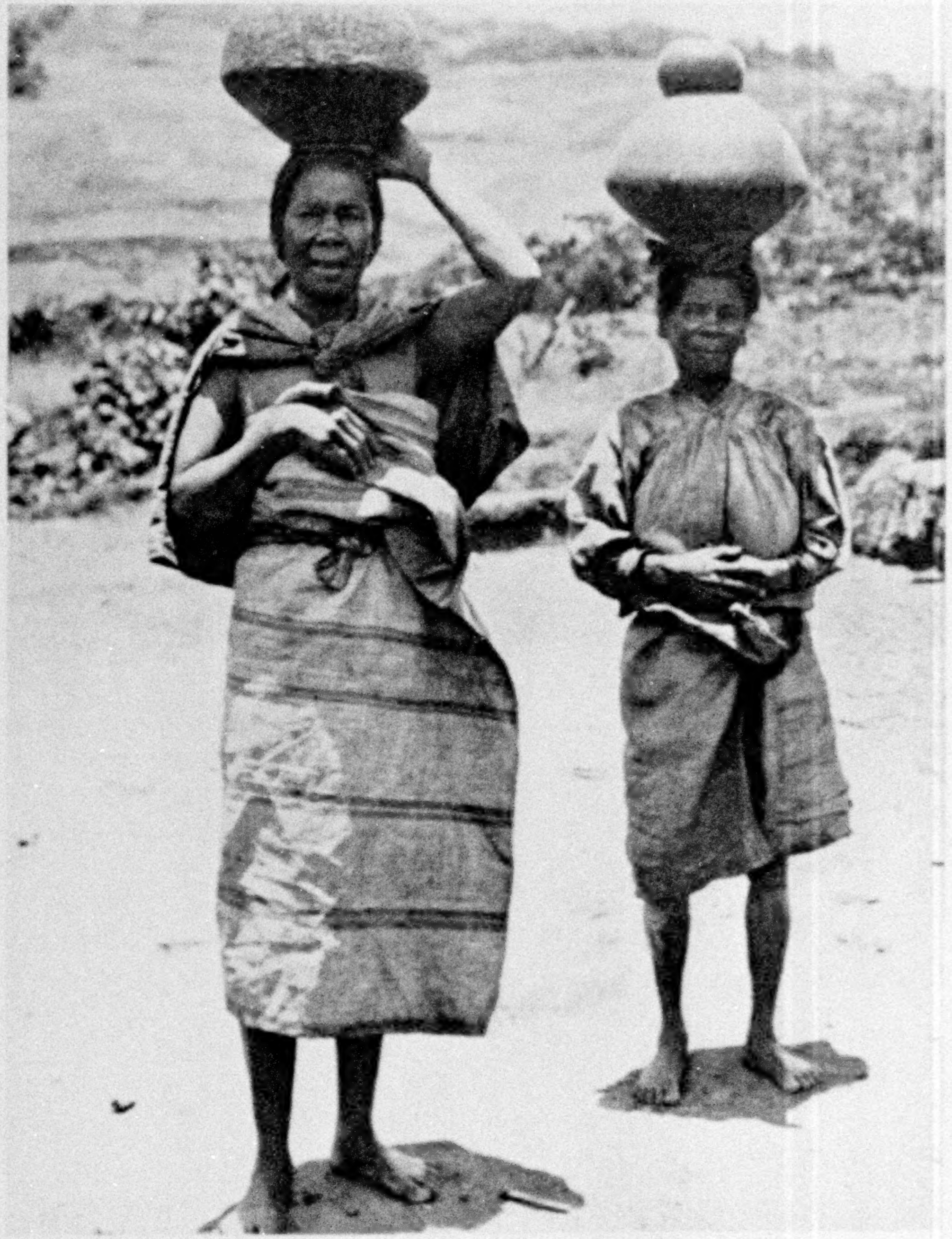
But we had no time to stop at this attractive place. On the first leg of our 600-mile journey down the central plateau of Madagascar we traveled in automobiles loaned by colonial administrators.

When we had gone about two-thirds of the way the character of the country changed. As we crossed the northern boundary of the region of the south we entered a drier country. The landscape took on much the aspect of the butte country of eastern Utah.

The natives here were more primitive than those to the north. The men carried formidable-looking spears and their clothing rarely consisted of anything save the lamba. This they commonly wore wrapped around the waist, more as a body support when doing heavy work than as a concession to modesty. Many of the children wore no clothes at all.

We had to send ahead to Tuléar for the only available truck in this section of Madagascar, to pick us up for the last 200 miles of our journey. Since there are no towns along this last stretch, the traveler over the recently completed road must be





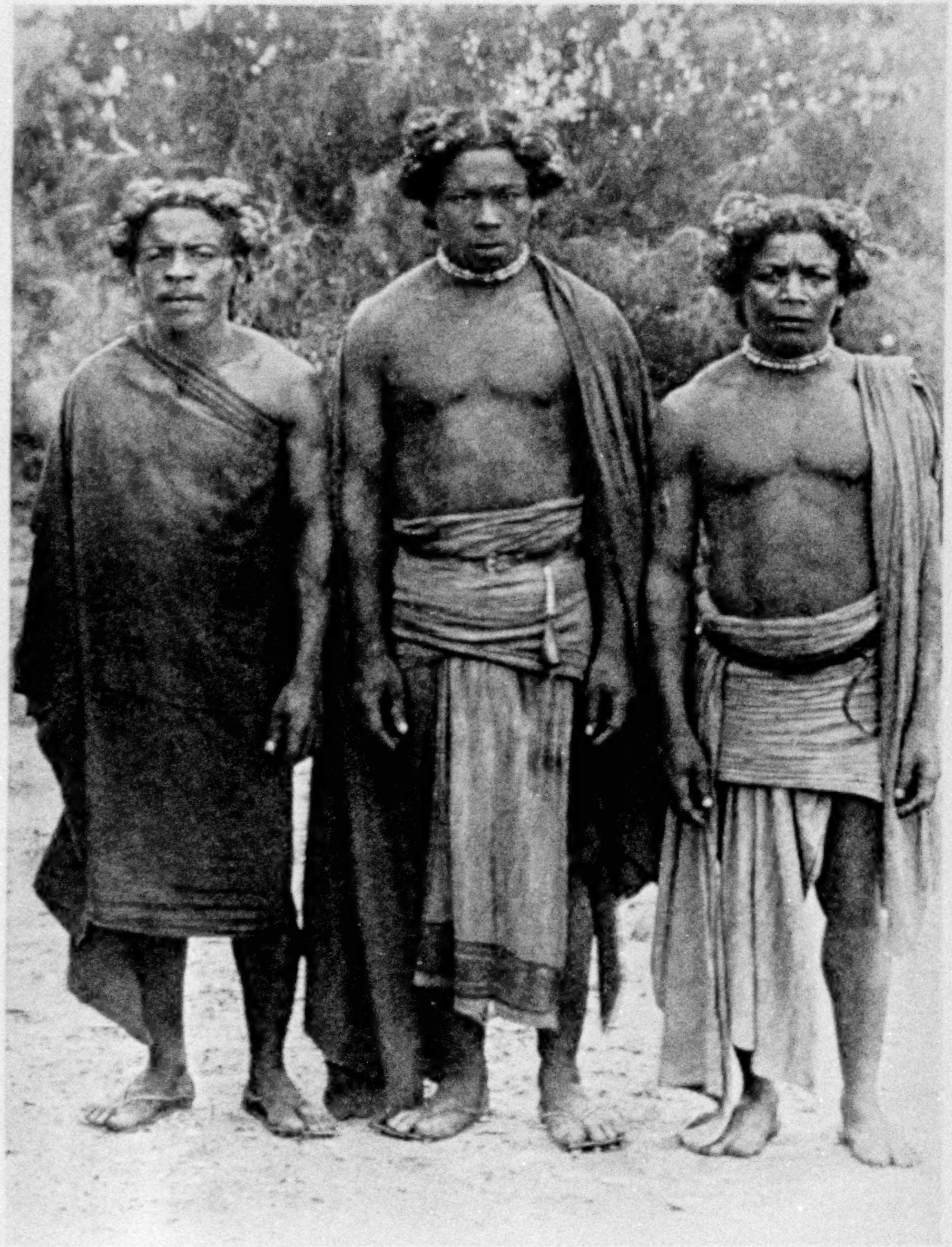
Photographs courtesy French Colonial Office

EUROPEAN APPAREL DELIGHTS THE HOVA GIRL

Erect, proud, intelligent, this young woman of Tananarive is of the brown rather than the black race (see text, page 184). She is barefooted, despite her foreign clothing, and keeps at least a semblance of the ever-present native *lamba*, or shawl.

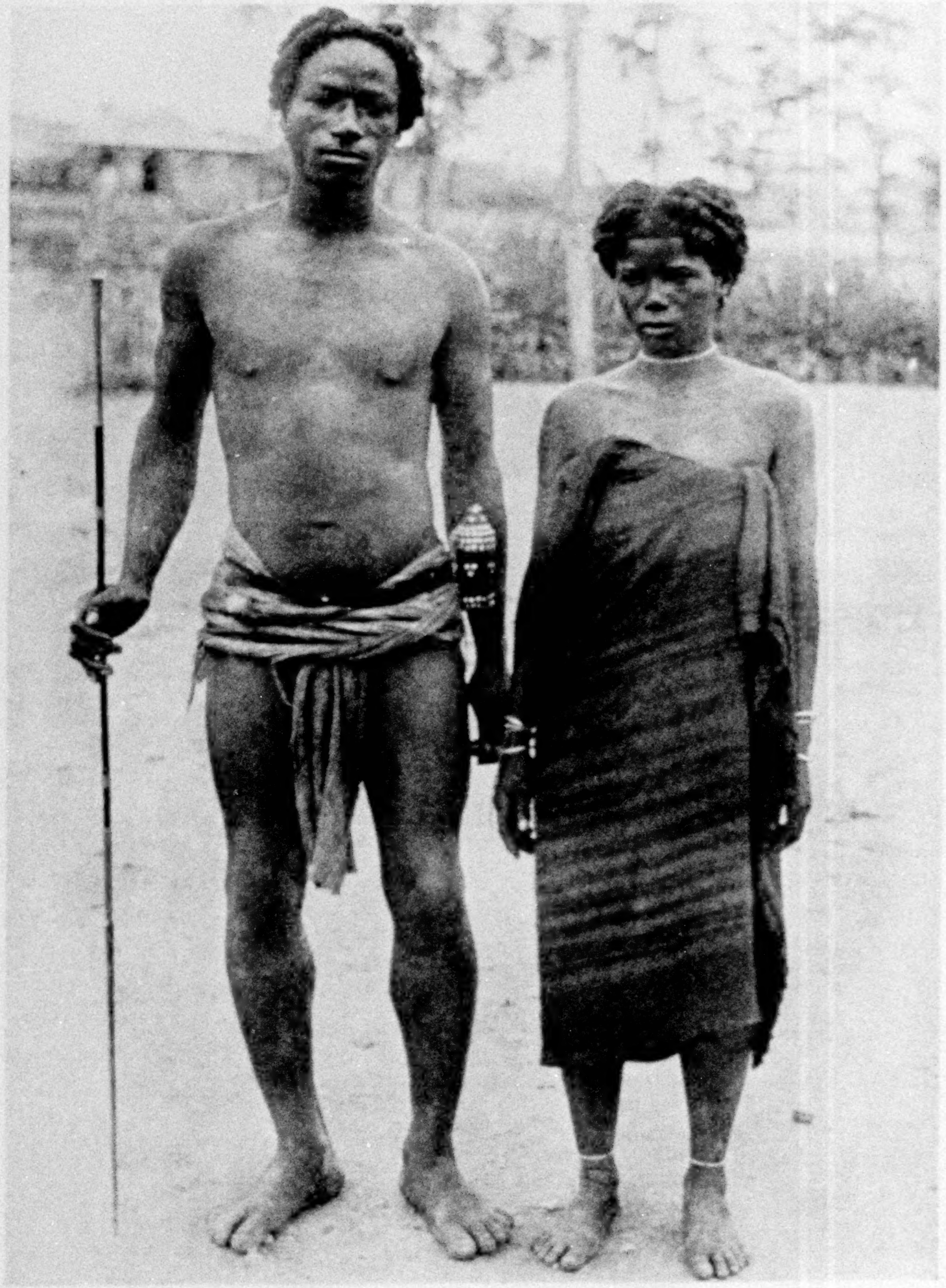
BETSILEO WOMEN CARRY WATER FOR THE FAMILY

Many villages in the south of Madagascar are miles from any spring or stream (see text, page 198), and mothers and daughters of the households trudge for hours across the hot sands bearing the clay jugs upon their heads.



MAHAFALY PORTERS PLASTER TALLOW IN THEIR HAIR

These workers of southern Madagascar are a happy, carefree lot. Two of the men in the picture are wearing sandals of untanned skin, used for travel over stones and thorns.



ANTANOSY TYPES LIVE NEAR FORT DAUPHIN

Though all the Malagash except the Hovas (see illustration, page 190) have a trace of African blood, they are largely of Malayo-Melanesian stock (see text, page 184).

Photographs courtesy French Colonial Office

WHERE THE DRUG STORE HAS NO LUNCHEONETTE

At a busy corner of the market, native herbs are sold, but the customer must go elsewhere for his cigars and light refreshments.

sure to take sufficient supplies, both of gasoline and of good luck, with him. Few cars pass this way; even the mail throughout the south is carried on foot, two men bearing 88 pounds on a pole between them.

One evening while camping, as usual, in the *case passage,* a tiny grass hut which, in all remote sections of Madagascar, is provided for European travelers, we were entertained by the passing of a funeral procession. When I heard voices blended in a weird and fascinating chant, my first impulse was to rush outside and watch the mourners as they passed; but my companion warned me against advertising my presence.

The Malagash, while not ordinarily fond of *toaka* (rum), always make a funeral the occasion for consuming great quantities of it.

What I saw and heard from my obscure position inside the hut reminded me of the nightshirt parade which features some of the football "pep" meetings in America.

BOTH ROOMS OF TULÉAR'S GRAND HOTEL WERE OCCUPIED

Rumors of good accommodations in Tuléar had led us to look forward to a few days' rest before forging ahead into the desert, but the Grand Hotel proved to be grand only in name; its two rooms were already occupied!

CAMP MEANS A GOOD TIME TO MALAGASH PORTERS

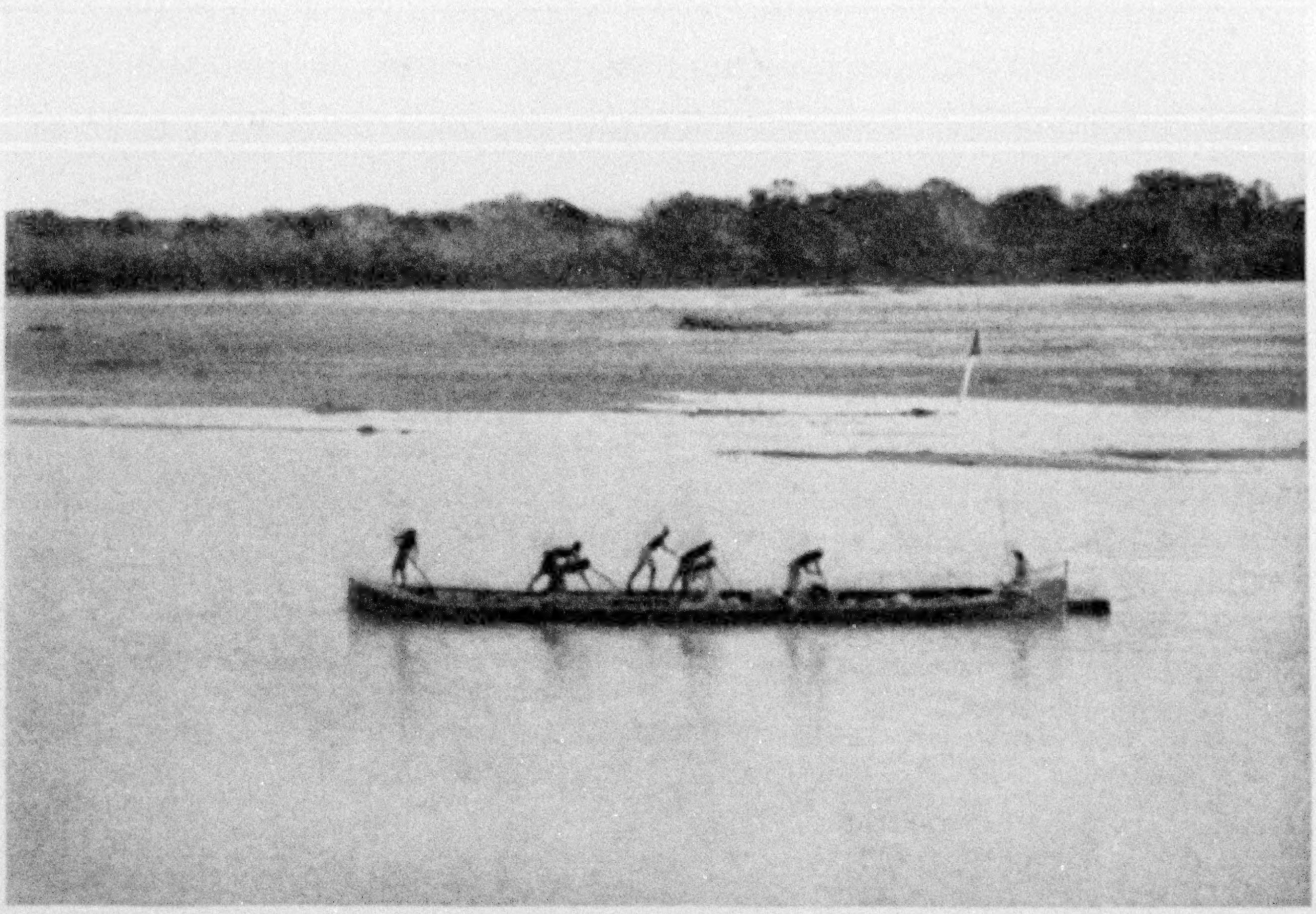
After a day's march of 25 miles, the natives like to talk and sing all night, especially if the moon is bright and they are not thirsty (see text, page 203). Water is carried in calabashes, one of which may be seen in the right foreground.

We took time while in Tuléar to indulge in the novelty of hunting eggshells of the recently extinct Æpyornis, one of the largest birds known, and possibly the roc of the "Arabian Nights." While we were not lucky enough to find any entire eggs, we found fragments up to six inches across. Some of them were in a semifossil condition, buried a yard under the sand, while others were lying exposed on top of the rocks (see pages 196, 197).

One of the queerest plants we saw in the south was the cactuslike Didierea, which grows along the coast. Its long, leafless arms, unlike the branches of other trees, bend *toward* the wind, reaching out into it, as if eager to show themselves masters of the monsoon.

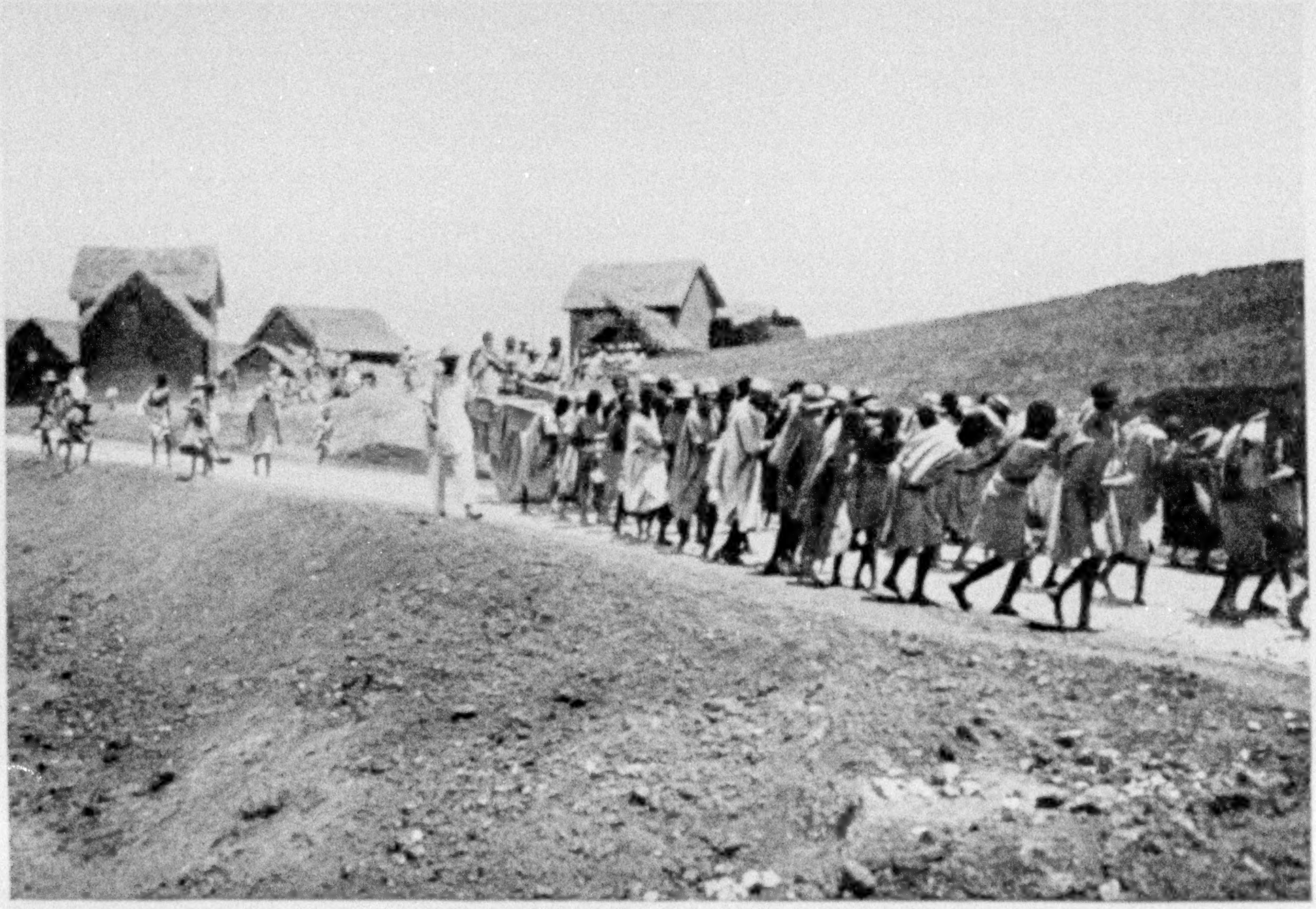
Even though the collector is sure to find many plants of value in any part of Madagascar, our objective was the desert region lying between Tuléar and Fort Dauphin, where, among other things, we hoped to find specimens of an almost extinct rubber plant, *Euphorbia intisy*.

We tarried in Tuléar a week, taking care of the plants we had collected along the way. Then, once more calling upon the only truck for hire in this part of the island, we pushed on, a day's journey to a small village on the edge of the desert.



PRIMITIVE CRAFT PLY THE BETSIBOKA RIVER

Man power at 12 cents a day is much cheaper than gasoline at 80 cents a gallon (see text, page 197). Travel in Madagascar is slow but inexpensive.



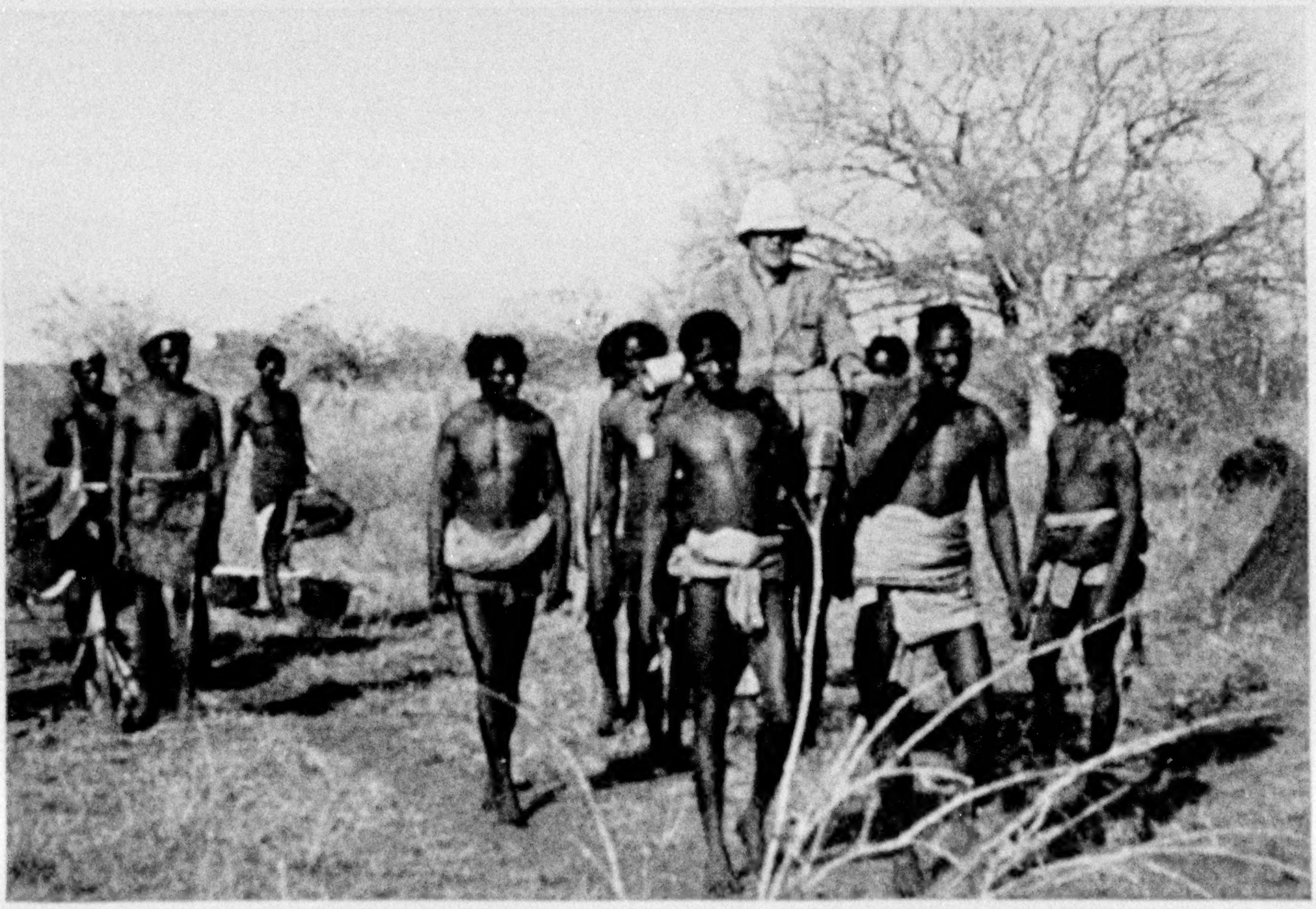
Photograph courtesy French Colonial Office

"STEAM ROLLING" IS DONE BY MAN POWER

Madagascar has some surprisingly fine highways, all built since the French occupation, at an extremely small outlay of cash. A system of universal taxes, similar to the old road poll of the United States, has provided the labor necessary to construct thoroughfares, excellent for automobile traffic, linking Tananarive with Tuléar, Ambovombe, and Fort Dauphin.

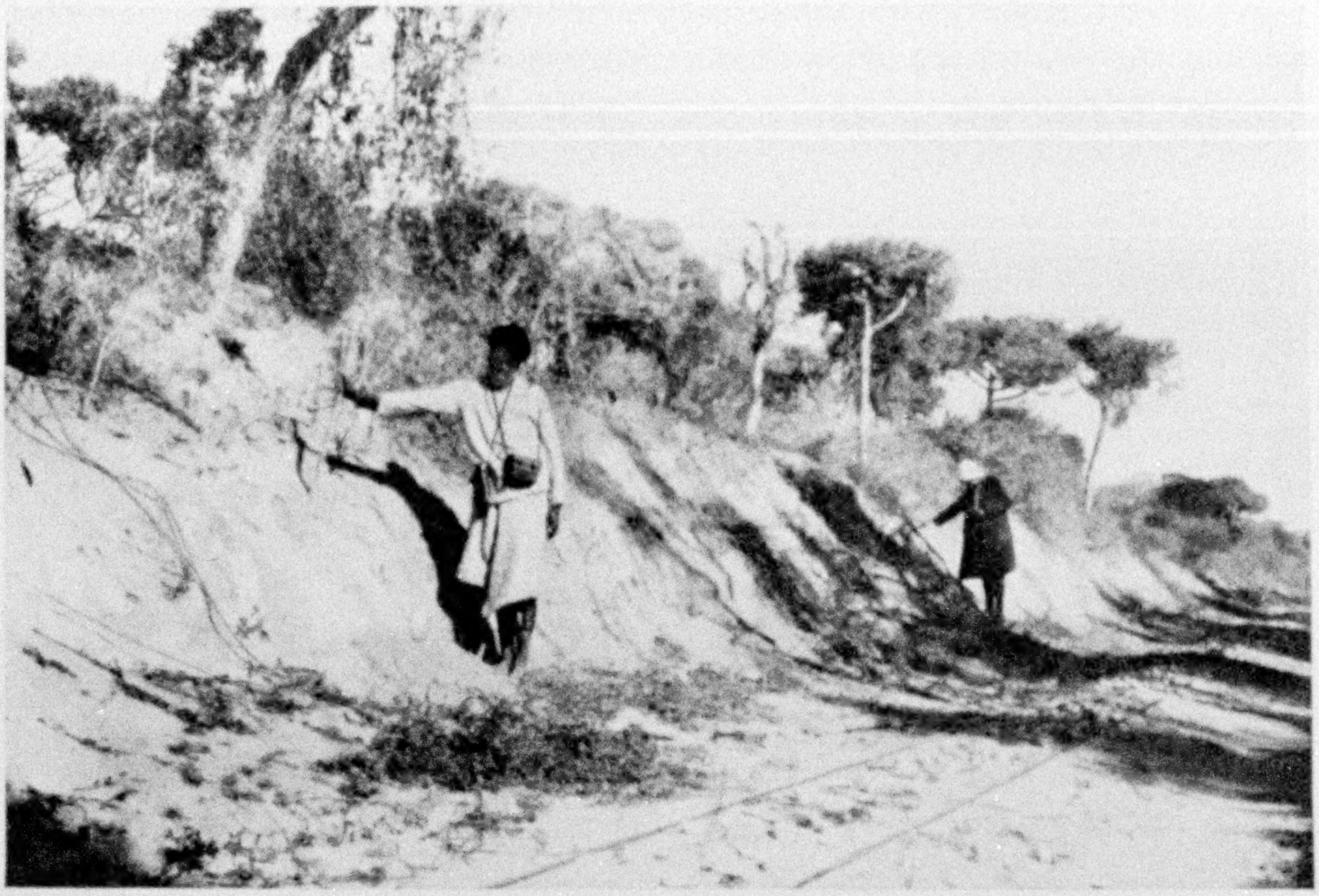
LAKE TSIMANAMPETSOTSA HAS NO OUTLET

This shallow body of water is a bitter disappointment to the thirsty traveler, for the milk-white fluid is utterly undrinkable. The natives consider it poison (see text, pages 200-1).



FILANZANA RIDING ADDS NOTHING TO ONE'S DIGNITY

To sit on a precarious seat slung between two long poles resting on the shoulders of four porters is not a comfortable experience. Walking is far pleasanter and more conducive to a feeling of independence, but the author was forced to conserve all his energy (see text, page 197), and traveled many miles in this way (see map, page 184).



HUNTING EGGSHELLS IS A POPULAR SPORT NEAR TULÉAR

In such sandy banks fossilized fragments of the enormous eggs laid by the Æpyornis abound (see illustration, page 197; also, text, page 193). This huge bird, now extinct, is believed by some scholars to be the roc of the "Arabian Nights."

Here we organized for the serious business of entering the brush.

READY TO ENTER THE BRUSH

It was necessary to invoke all the authority of the local government to get native porters for our expedition, for only too well did they know the dangers of the desert.

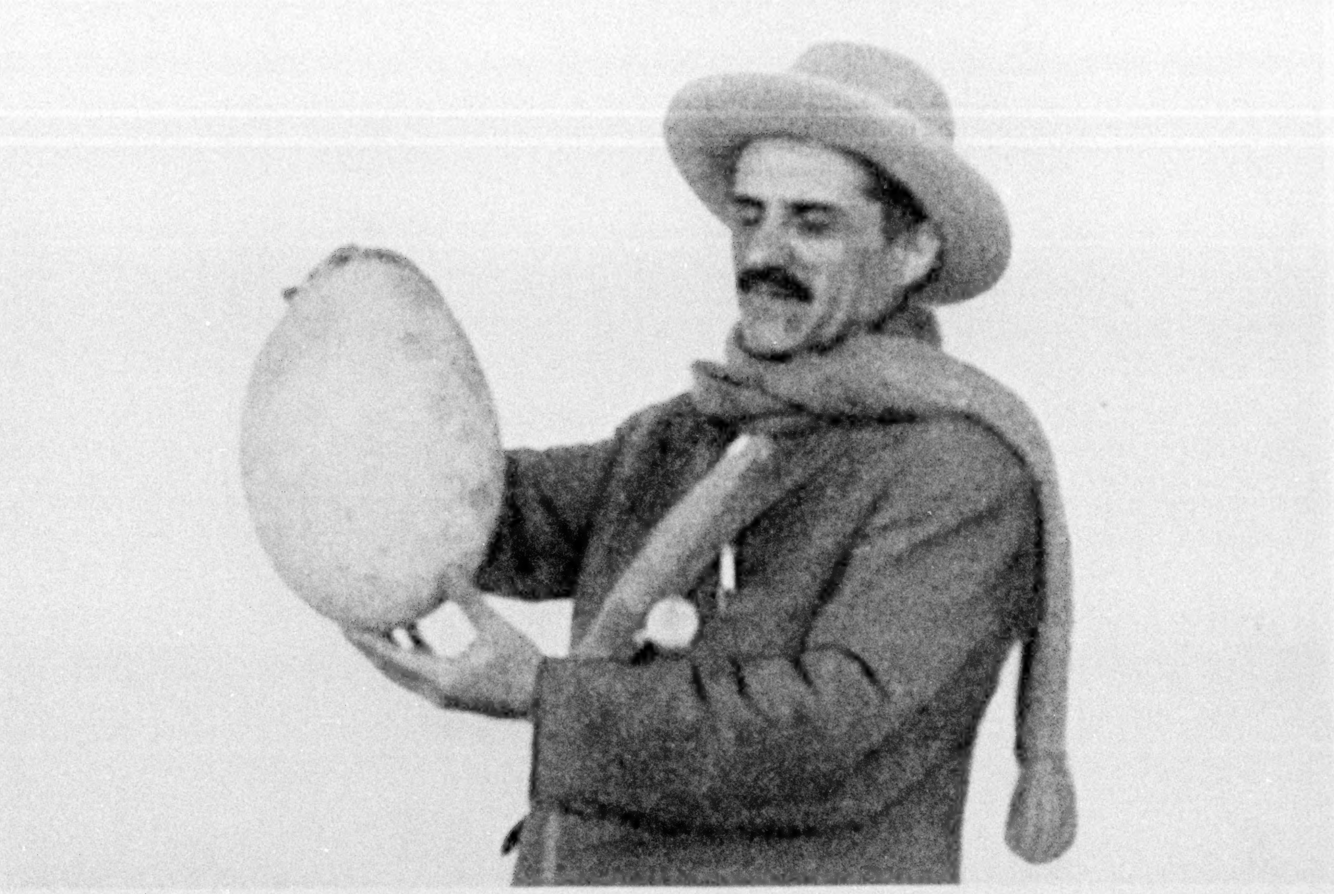
Finally, 38 men were rounded up and threatened with 15 days in jail if they should desert us. A native soldier was sent along to lend an air of authority.

Our main concern was an adequate water supply, for we knew that waterholes would be scarce in the land which we were about to enter. We likewise knew that 40 active men would require water—lots of it. On the other hand, it was foolhardy to make our load too heavy. So, hoping to reach waterholes within a few days, we decided to take along about 60 gallons. This we put into two canvas bags, each suspended on poles and carried by four men.

We were a queer-looking party, as we set forth on our 20-day march into the desert wilds. As usual, our indispensable white cork helmets were in striking contrast to our khaki hiking clothes and our thick leather leggings. The traveler in Madagascar needs not only to protect his head from the blistering heat of the sun and his eyes from its blinding rays, but if he enters the brush he must take care that his legs are well fortified against the vicious thorns.

Our chief food supply was rice. We allowed more than two pounds of the dry cereal a day for each of our porters. It was not an uncommon sight to see them cook and eat this enormous amount at one meal, but they were never quite satisfied without a drink of *varendrano* (rice water) to top off the dinner. It is customary in preparing rice to let a small portion of it burn and adhere to the kettle. Varendrano is made by pouring cold water over this browned crust and bringing the mixture to a boil. The resultant "dishwater" is the Malagash delight.

One would expect that containers in which to cook this essential food would have formed a necessary part of our load.



EGGS OF THE EXTINCT ÆPYORNIS ARE AMONG THE LARGEST KNOWN

Fragments of shell up to six inches across are often found near Tuléar, some in a semi-fossil condition, buried in the sand, and others exposed upon the rocks (see, also, illustration, page 196). Only about a dozen entire specimens such as this have been discovered (see text, page 193).

But not so, for every good Malagash household has its huge iron kettle, which for a handful of rice the owners are more than willing to lend.

Neither was it necessary for the natives to carry dishes on which to serve their food. When, at the first meal, I saw them eating from tightly woven little grass baskets, I was curious, for I knew no baskets had been packed. A little later the puzzle was solved, for after cleaning up their rice via wooden spoon and fingers, they placed the baskets—their straw hats—back upon their heads.

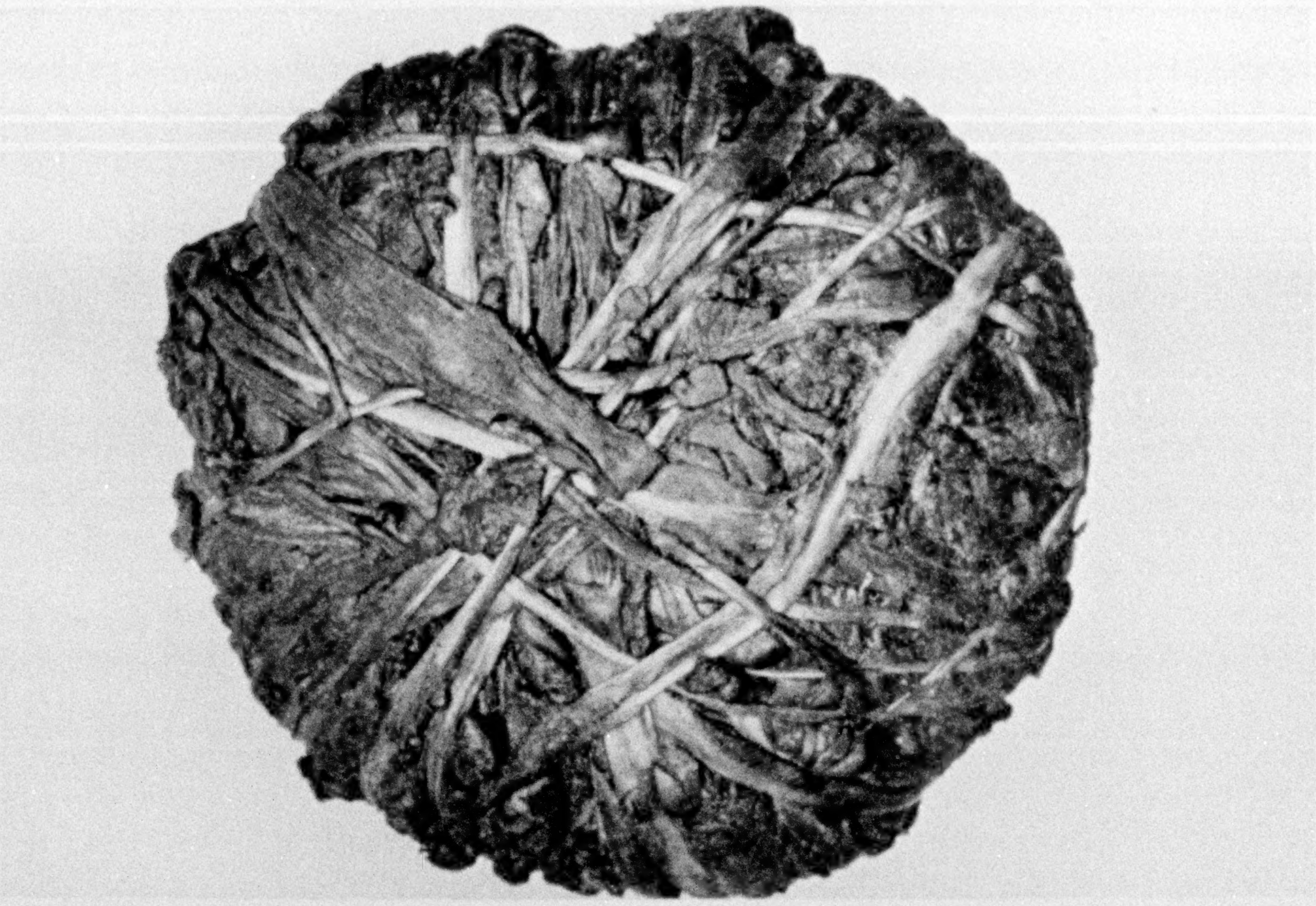
BOB-BOBBING IN A FILANZANA

The most extraordinary items in our equipment were the two *filanzanas* in which my companion and I were to ride. I had had my introduction to this "most comfortable uncomfortable" vehicle on several short excursions, for the filanzana is quite the commonest means of getting about in Madagascar. It consists of a chair swung on two 10-foot poles, and is carried on the shoulders of four stalwart natives. These alternate every five minutes with four others, so that a filanzana crew consists of eight men. Thus we had 16 porters whose sole duty it was to carry my companion and me.

One unacquainted with the Malagash might consider the filanzana bearer, who receives only 12 cents a day for his services, a very much downtrodden man; but he has no such thought, for as he trots along his laughing and chattering never cease. To his mind it is an honor to be one of the filanzana crew, and his contempt for the lowly baggage carrier is very amusing.

As I was trotted along, suspended in mid-air, I felt that I had neither dignity nor independence. It would have been much pleasanter to walk than to go bob-bobbing up and down in my lofty perch in the filanzana. However, my companion and I were forced to conserve our energy, for we feared the enervating climate of the Tropics.

In spite of our efforts to minimize our loads, most of our porters were carrying



Photograph by Robert Taylor

VIRTUALLY PURE RUBBER OOZES FROM THE INTISY PLANT (SEE PAGE 205)

Formerly hundreds of tons of this product were shipped from southern Madagascar every year. Now such balls reach the market only occasionally. No treatment is necessary in preparing this gum. A cut is made on each stem, and from the incision a milky juice runs out and hardens into bands of wonderful elasticity. The natives strip off the strings and wind them into compact masses, always incorporating plenty of dirt and stone to increase the weight.

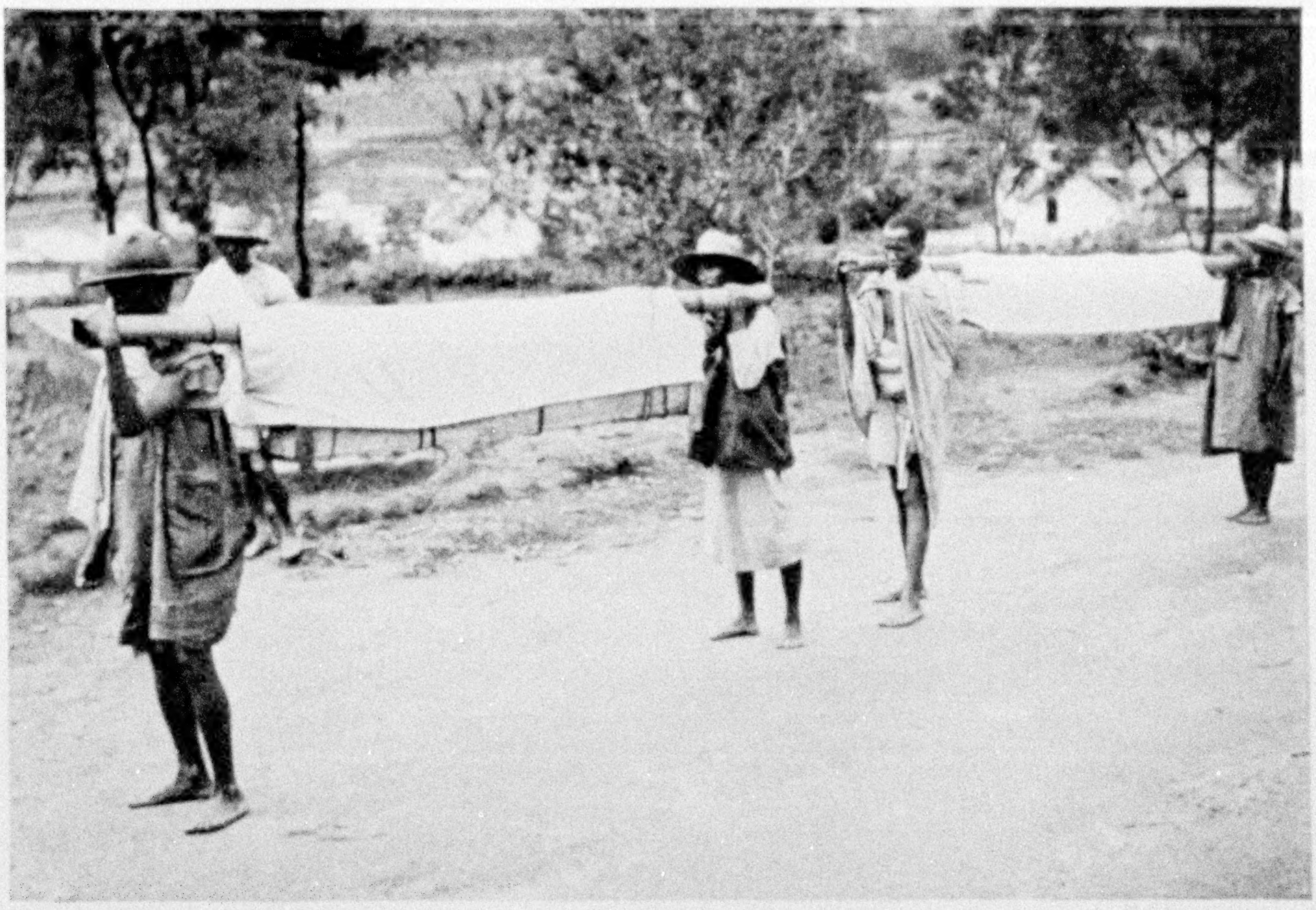
more than the usual 50 pounds each. We had gone only a few miles when we decided we would have to lighten our burdens. The water bags proved to be especially heavy and cumbersome. Of course, we could not afford to waste any of the precious water we had brought along, but each of the men was urged to drink all he wanted. We put much of the remainder into 30 calabashes—large, jug-like gourds—which we commandeered from the natives. In this way the load was more evenly distributed.

THE WATER SUPPLY FAILS

We hoped to replenish our water supply at one of several villages which lay in our path, but in each of these tiny communities, boasting not more than a dozen or so grass huts, we found the natives had barely enough water for their own needs. In fact, so precarious was their situation that women of the village were often seen collecting the early morning dew from the bushes on which it gathered during the night. This they did by beating the branches with heavy paddles, making sure that every bit of the water fell into their thick clay jugs.

The end of the second day found us practically without water. Naturally, there was nothing to do but push on. The worst of the trip lay ahead. The porters became fearful and began to complain.

The horror of the following day is beyond description. Early in the morning tremulous cries of "*Tsy mish rano*" (no water) rent the air; but, in contrast to their grumbling attitude of the previous evening, the porters soon became quiet and resigned. The inevitable was upon us and we must face the dread reality. Not a word did we hear from our men, as bravely they pushed forward. When one of their number dropped to the ground exhausted, there was not a murmur. We could stop only long enough to moisten the fallen man's lips with a few remaining drops of water in our own canteens, and then march on, leaving him to his



Photograph courtesy French Colonial Office

NATIVES GO TO THE GRAVE ON THE SHOULDERS OF THEIR FRIENDS

A funeral means a period of feasting and gaiety which lasts for several days (see text, page 192).

fate. It was a gruesome march, for soon another fell; then another, and another, and still another. It seemed cruel to leave these five faithful servants apparently dying by the trail; yet the one thing they needed we could not offer.

We must proceed on foot, of course, now; for, while we did not know how far ahead it was to water, we knew it was out of the question to reach any by going back. Finally our perseverance was rewarded. Toward the middle of the afternoon we came in sight of a village and we took on new courage. Fortunately, we found water, very bad water, and just enough of it so that we could each have a sip, after we had sent back men and women of the village to rescue our fallen porters.

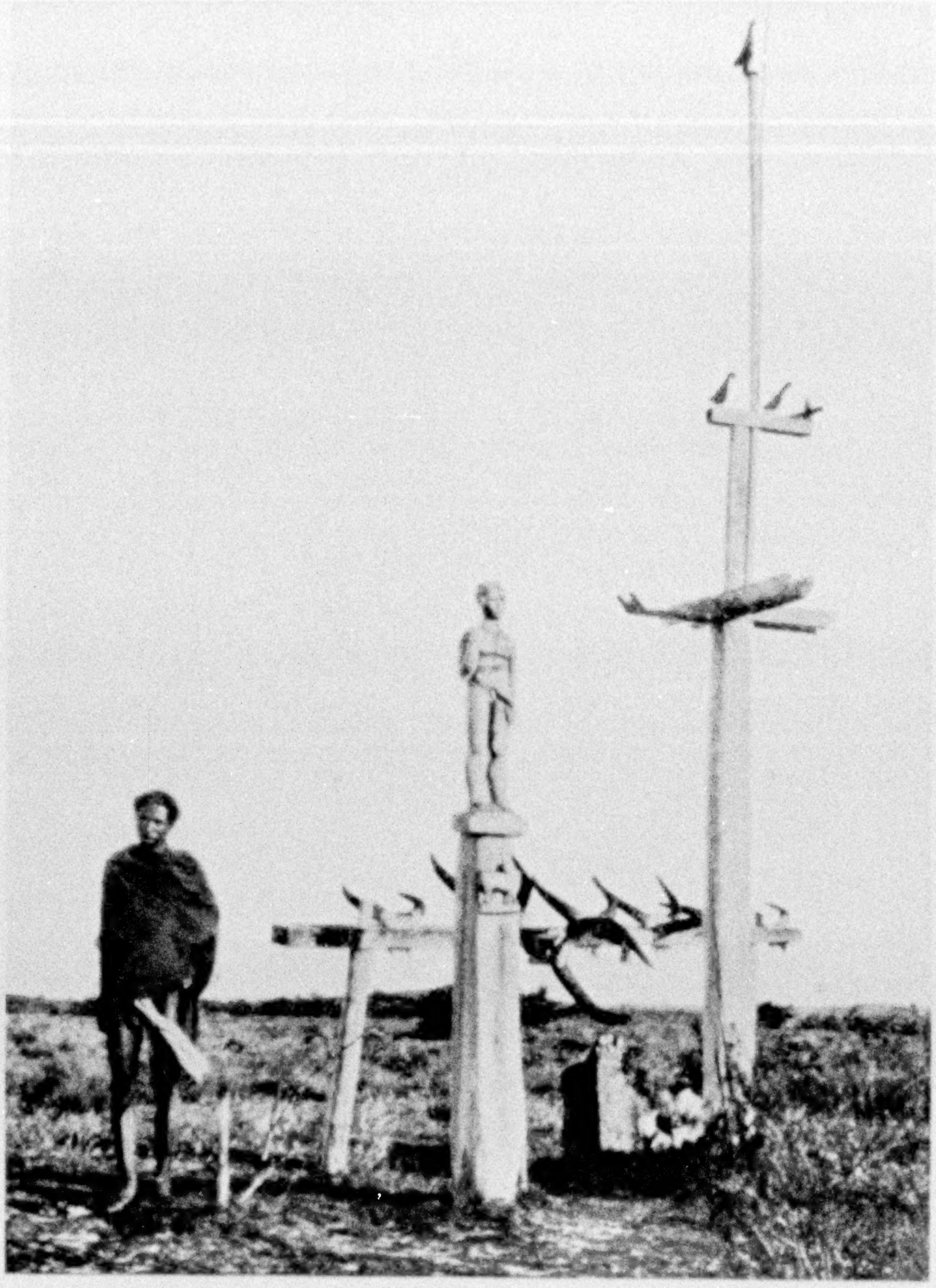
Summoning a small boat, I set out with a company of villagers, along with a few of our porters, to obtain enough water for our immediate needs and to replenish our supply for the morrow. Walking back to the village from the waterhole, the exertion proved too much for me and twice I went down. I was alone, the others having gone back by boat while I returned overland to look for plants.

Both times, after a short rest, I was able to get to my feet and drag on, and I returned to the village at dark, completely exhausted. The fatigue probably brought on the slight attack of malaria which followed, and, though I managed to keep going every day, it was a long time before my normal strength returned.

THE STRICKEN PORTERS RECOVER

Fortunately, none of the five porters who had collapsed died; all rejoined our party within a few days. However, two of them were barely able to drag along, much less able to do any work, for the remainder of the trip. In fact, not one of our 38 men was able to carry a full load after our desert experience, and we were forced to proceed at a much slower rate, many of the porters lagging behind as much as a day's march.

Whenever we could, we persuaded men of the villages to accompany us on a day's march, thus easing our own porters' burdens. But recruits were hard to get. In-



GRAVE ORNAMENTS SHOW THE WEALTH OF THE DECEASED

Oxen are killed for the funeral feast and their horns put up over the place of interment. A man's standing in the city of the dead is determined by the number of animals slaughtered to feed the celebrants of his last rites.

deed, we passed through so many entirely female communities that it finally dawned upon us that somehow the natives had suspected our mission and the men were in hiding.

Water throughout the entire region was scarce and bad and we spent many days of torturous longing. Many times we had our hopes built up only to find a dry waterhole or one in which the water was so charged with minerals that we could not drink it.

The water was always dirty, for the animals of the region had found all the waterholes long before we did. Not a drop was really drinkable, and we were glad to use our daily malaria preventive (quinine) to remove its foul taste from our mouths.

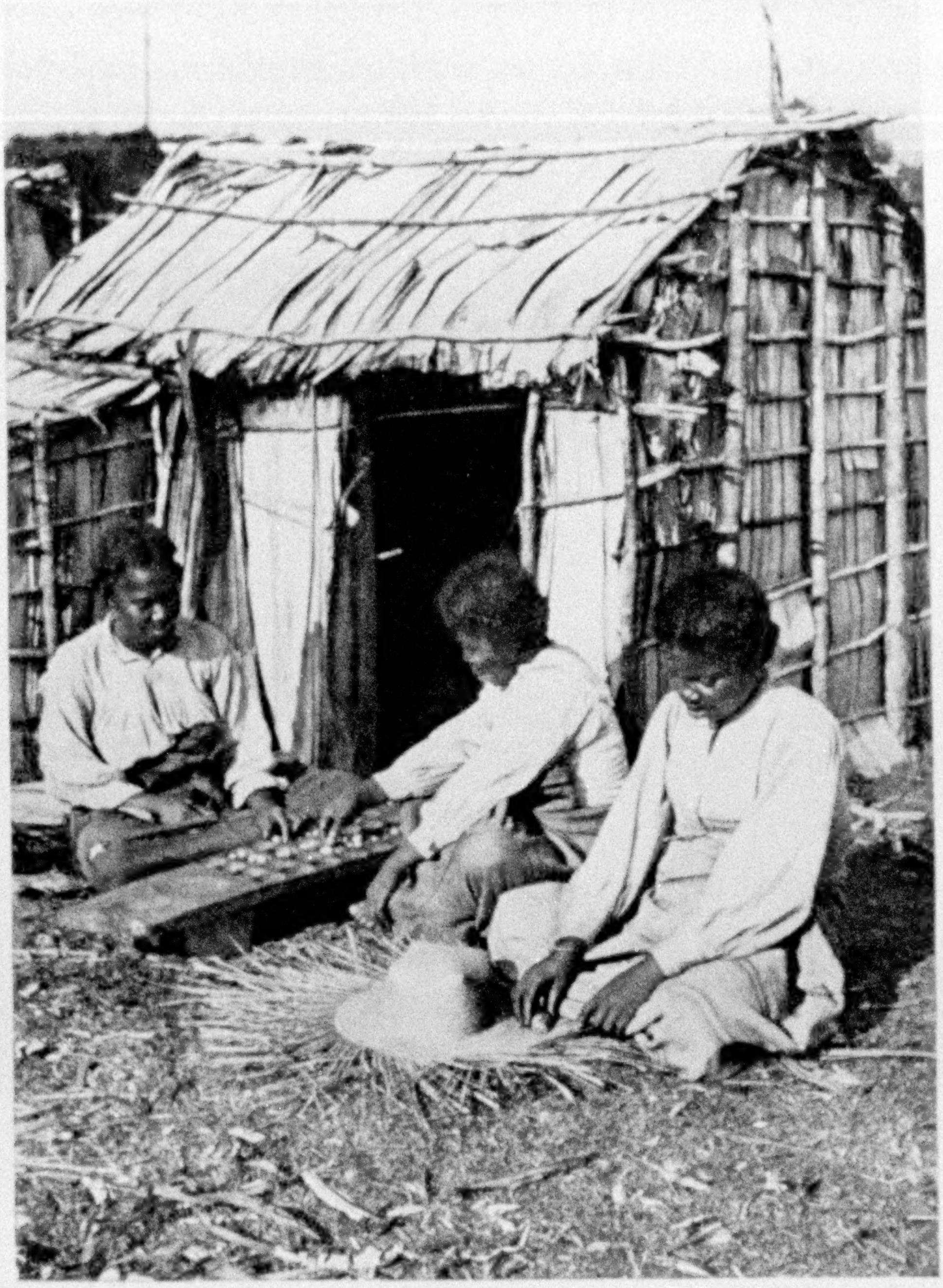
MEAT HOLIDAYS FOR PORTERS

We were able to supplement our food supply in the villages, for cattle, sheep, and goats were plentiful in this region. Thus we provided our porters meat—a real holiday treat to them. Of course, we could not carry fresh meat along with us, but often when bargaining for an animal we would specify that it should be delivered to us a half-day's march ahead. So we would be accompanied by a native—sometimes a man, sometimes a woman—who would lead the animal and care for it until we were ready to slaughter it.

Often, too, our porters were able to buy sweet potatoes and *balaza* (manioc root) from the natives along the way. This root, from which a tapioca is made, when roasted over the coals is to many of the Malagash the finest food obtainable. Late one afternoon I made the mistake of inquiring *"Mish balaza tsara?"* (Is manioc good?) The emphatic answer, given by all eight porters in unison, was uttered too quickly for my ears to catch, but the meaning was clear: "Oh, sir, don't torture us by speaking of manioc when we are so hungry!"

As we skirted the shores of Tsimanampetsotsa, a shallow lake some 10 miles long and a half mile wide, whose salty, milk-white waters were undrinkable, and therefore considered poisonous, our porters eagerly gathered bits of clay and wood. These they treasured carefully as good-luck charms. Later I was able to purchase from one of my men what he claimed to be an especially powerful piece of dried mud. To cure any ill, he explained, one had but to paint the face with this potent clay and immediately his malady would vanish.

Whatever our hardships in the desert, we found compensation in its wonderful plant life; for this traveler's hell is just as surely a botanist's paradise. So abundant were the plants in this region that in most places it was impossible to penetrate the dense thickets, and we could move only along cut paths.



Photograph courtesy French Colonial Office

WOMEN FOLLOW FIRESIDE PURSUITS IN THE OPEN

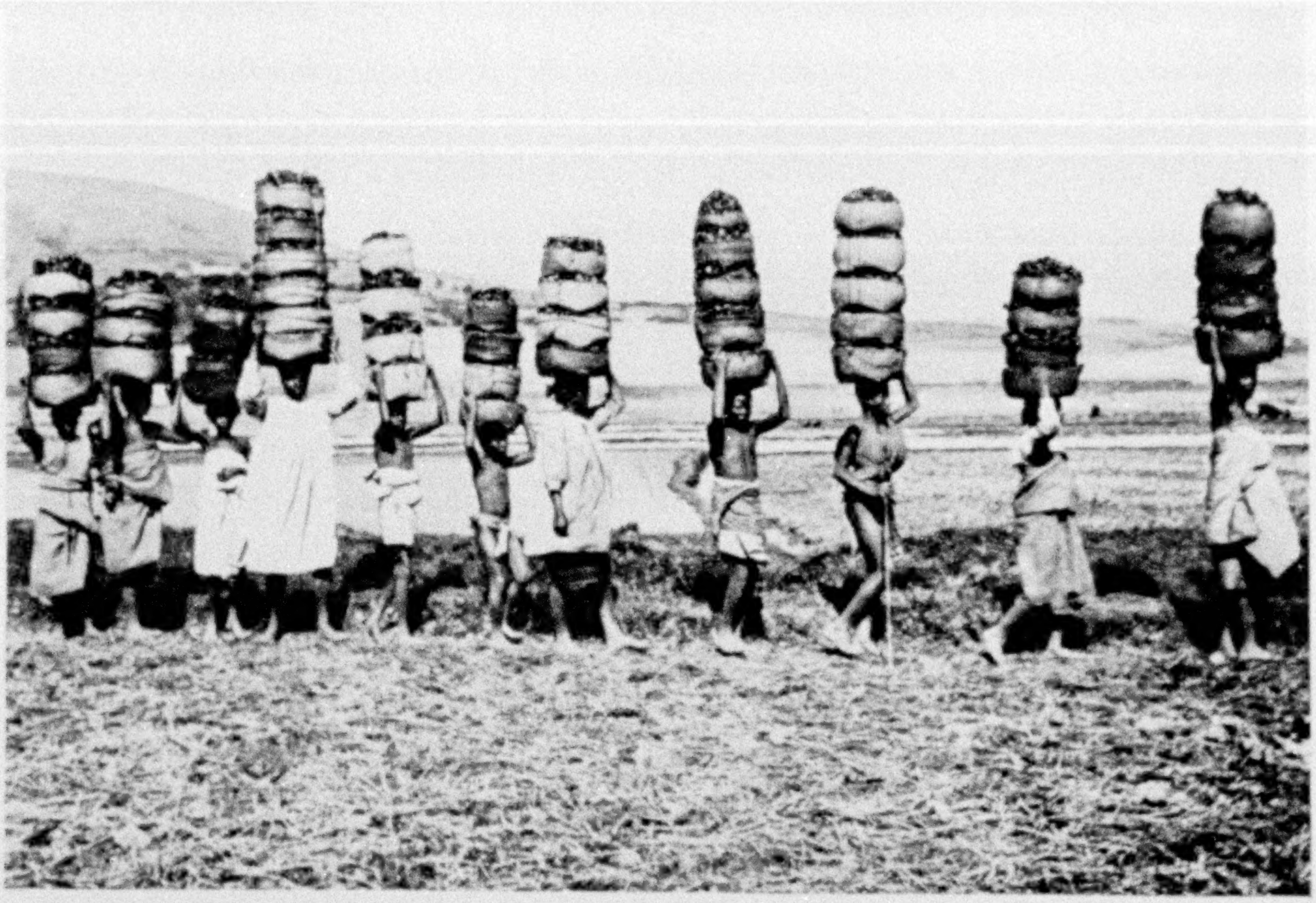
The game in progress here is *karatra*, a favorite pastime of the Malagash. It is similar to checkers and is played on a board of 32 holes, with seeds or pebbles for "men." Native houses, because of their low entrances and lack of light, are used for little more than sleeping and cooking. Hat-making and kindred household arts are practiced out of doors.

The beauty of the many ornamental plants was in striking contrast to the severity of their surroundings. The brilliant red and orange blossoms of the Kigelia tree, the intense crimson of the hibiscuslike Megistostegium, the stocky cactuslike elephant's-foot, with its beautiful white or yellow flowers, the succulent multicolored leaves of the Kalanchoes—all did their best to soften the harshness of the desert plains.

Less beautiful than these gems of the desert, but no less interesting, were the squatty bottletrees, 10 feet thick and only twice as tall, which had an air of solidity and permanence about them not shared by the frail grass huts of the natives of this region (see illustration, page 205).

Even though we were able to travel for the most part on paths already cut, our barefoot porters often found walking very difficult because of the thorns of the pricklypear, a plant which long ago found its way to Madagascar from America.

Most of this south country, unlike the rest of Madagascar, is flat. The records are meager, but it is known that much of this region has an annual rainfall of less than 10 inches, and half of each year is entirely without rain. Droughts of six years' duration have been known to occur. So it is only plants able either to utilize



Photograph courtesy French Colonial Office

CHARCOAL-CARRIERS HANDLE ENORMOUS LOADS

Because of the almost complete destruction of what were once wonderful forests over much of Madagascar, the city dweller must be supplied with fuel brought over long distances. The head is always preferred for burdens borne by individuals. When porters work in teams of two, they rest the weight on their shoulders (see illustration, page 199).

dew from the air, or to store enough water within themselves to last from one rain to the next, which can live here.

LINK-SAUSAGE ROOTS FILLED WITH WATER

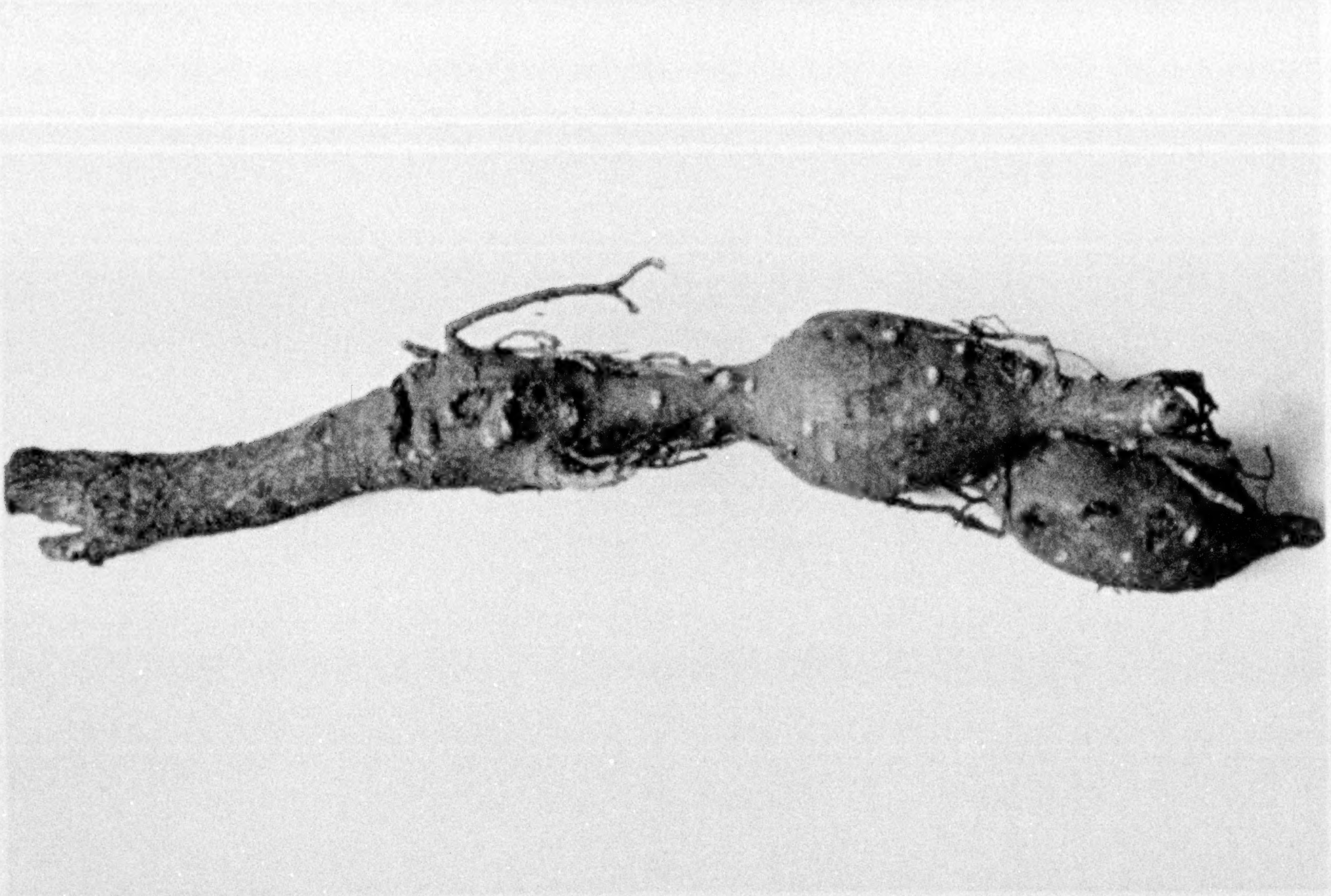
The real botanical prize of the expedition we found only in the south. Several years before the French occupation of the island, *Euphorbia intisy*, a plant yielding an exceptionally high quality of rubber, was discovered. Its collection by the natives was so ruthless that virtually every plant of rubber-bearing size was exterminated (see pages 198, 203, and 205).

No serious attempt was ever made to grow this valuable rubber plant in plantations, and even botanists acquainted with Madagascar feared that it had become extinct.

Consequently I was overjoyed when, after passing many weary miles and after having my hopes built up many times only to have them dashed to earth again, on the 16th day of our filanzana journey, I actually discovered this peculiar plant. It was growing on rocky soil which apparently had no water in it at all, but on digging up specimens to carry back with us we found that the roots possess an absolutely unique water-storage system.

They reminded me of a string of thick link sausages, each swelling being filled with almost pure water. Though not so good as that held in the leaf bases of the traveler's tree (see page 183), the water is even more appreciated by the traveler; for here, in this extremely arid land, thirst far more acute than is experienced in the humid regions, where the traveler's tree thrives, can be quenched. I ate these Intisy roots on several occasions, and while they could not be called delicious, they were at least "wet" and of better quality than the water we had been drinking.

Though our porters were willing to carry a filanzana or a load of baggage all day without grumbling, digging plants out of this extremely hard ground was such a difficult and unusual task that they



Photograph by Robert Taylor

LIVING INTISY PLANTS CAME SAFE TO WASHINGTON

The swellings on the root hold a supply of water which enables it to live in soil completely dry for six months of every year. In addition to the lot brought to America, the author collected specimens which he left at the botanic gardens in Tananarive, Marseille, and Algiers.

were soon showing me the blisters on their hands and trying to persuade me that the job was out of the question. It was only by promising each man the unheard-of wage of 40 cents for his day's work that I was able to get the number of specimens that I desired.

The whole southern section of the island, particularly that in which I found Intisy, is similar to our own Southwest. This allows us to hope that *Euphorbia intisy* will prove a profitable rubber producer in parts of Arizona and California.

On the last day of our filanzana journey our porters needed no alarm clock to awaken them. At 3:30 they were up and busy arranging their loads. In fact, when we reached Ampanihy, about noon, we had traveled 25 miles—one of our longest day's marches.

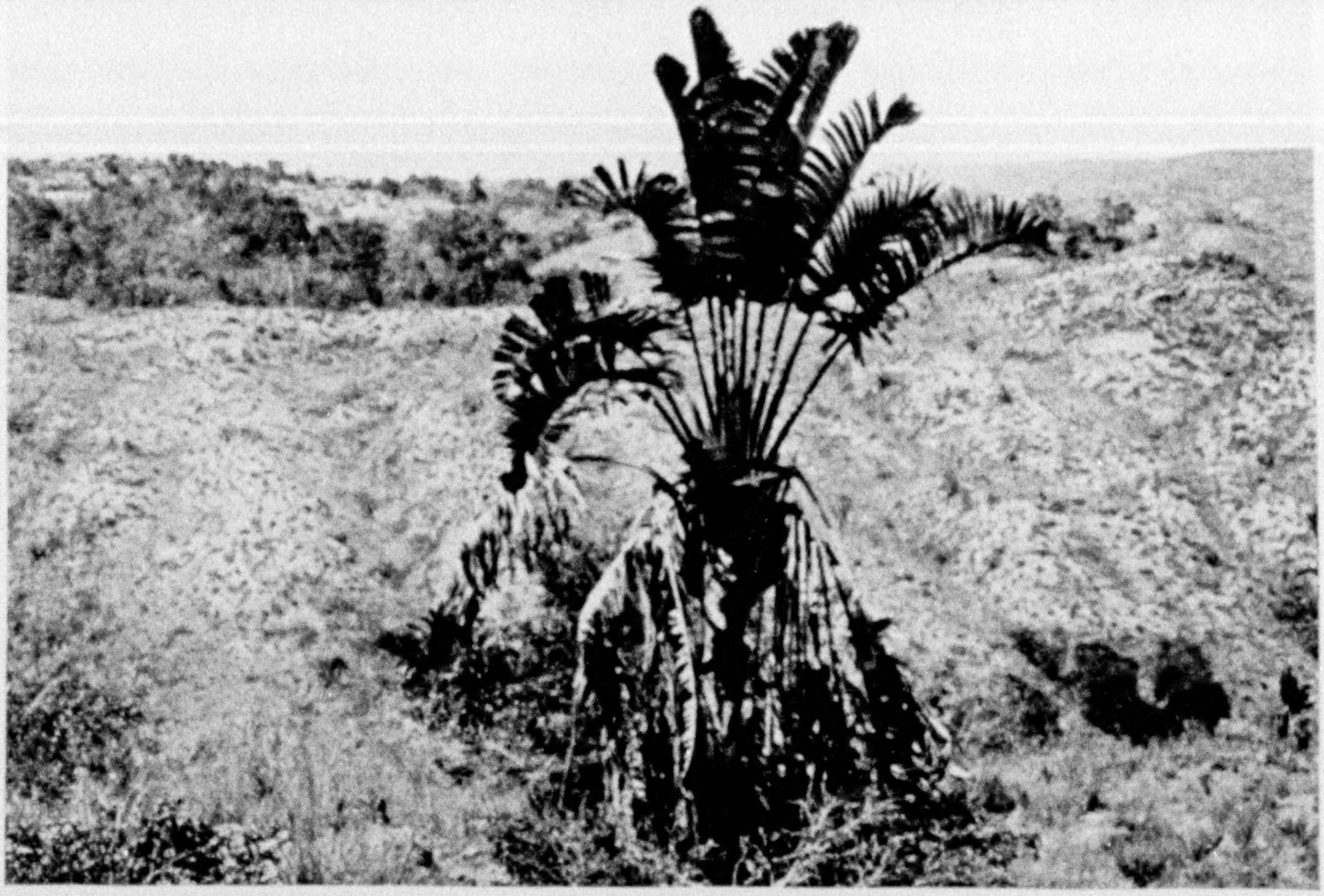
Here we parted company with our faithful porters, for we were back on the automobile road leading to Fort Dauphin. The fact that none of our porters had deserted us I attribute more to their docility than to the threat of imprisonment they had received before setting out. Jail in Madagascar means little, so far as a native's social status is concerned. The free food and lodging provided far outweigh the stigma of the large "P" sewed on the malefactor's shirt.

On the whole, they were a good-natured lot. Many times it was necessary to reprove them for singing and laughing all night long. Whenever we passed through communities unfrequented by travelers, the villagers would join, and there would be no let-up in the hubbub until early morning.

I asked some of our men what they expected to do with the two dollars or so each had received during this trip. "Pay my taxes and save what is left for buying cattle," was the almost uniform response.

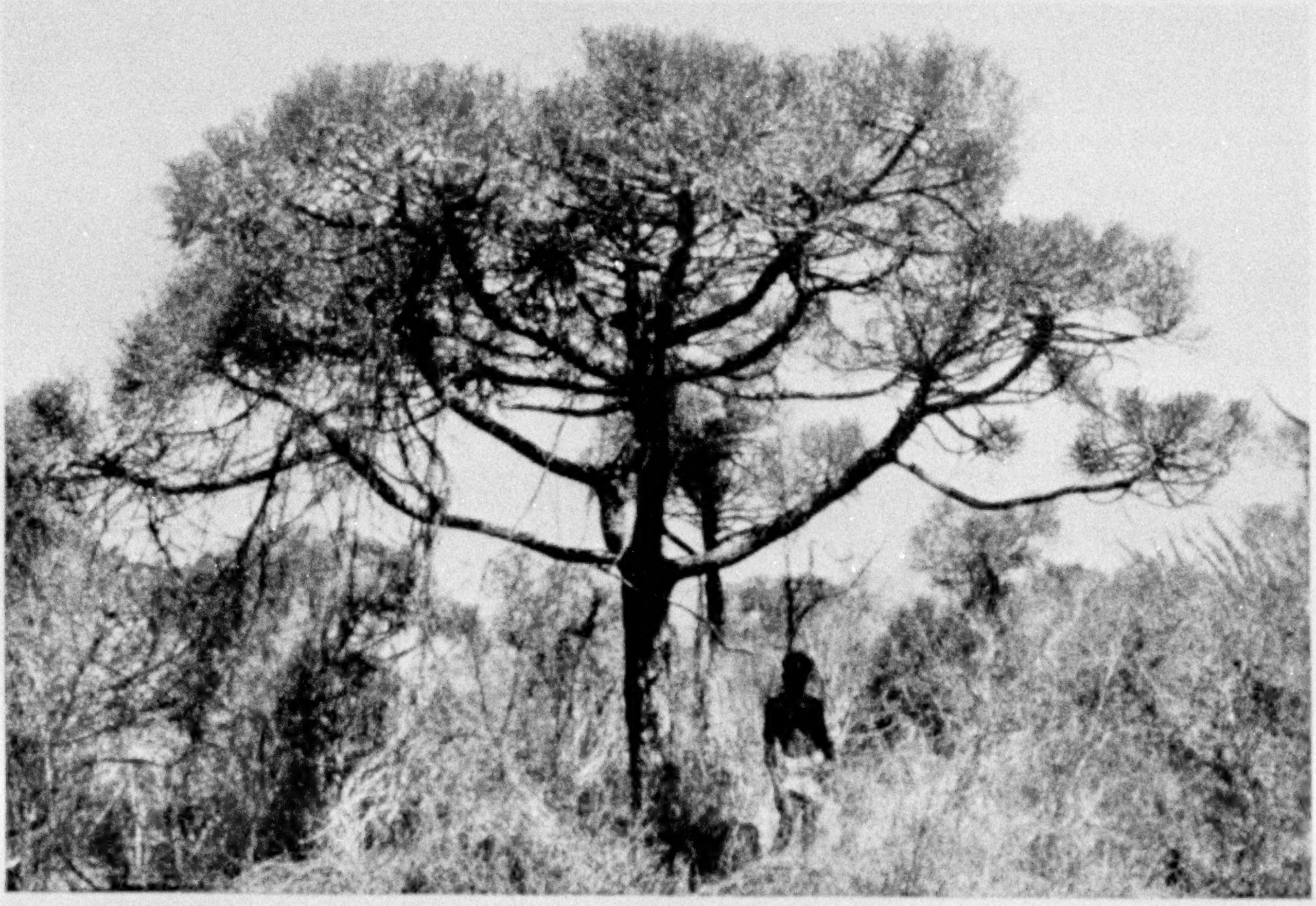
NO EARLY PROSPECTS FOR AUTOMOBILE SALESMEN IN MADAGASCAR

We had to send to Tuléar for our truck, the same one which had left us at the edge of the brush nearly a month earlier. During the week we waited for



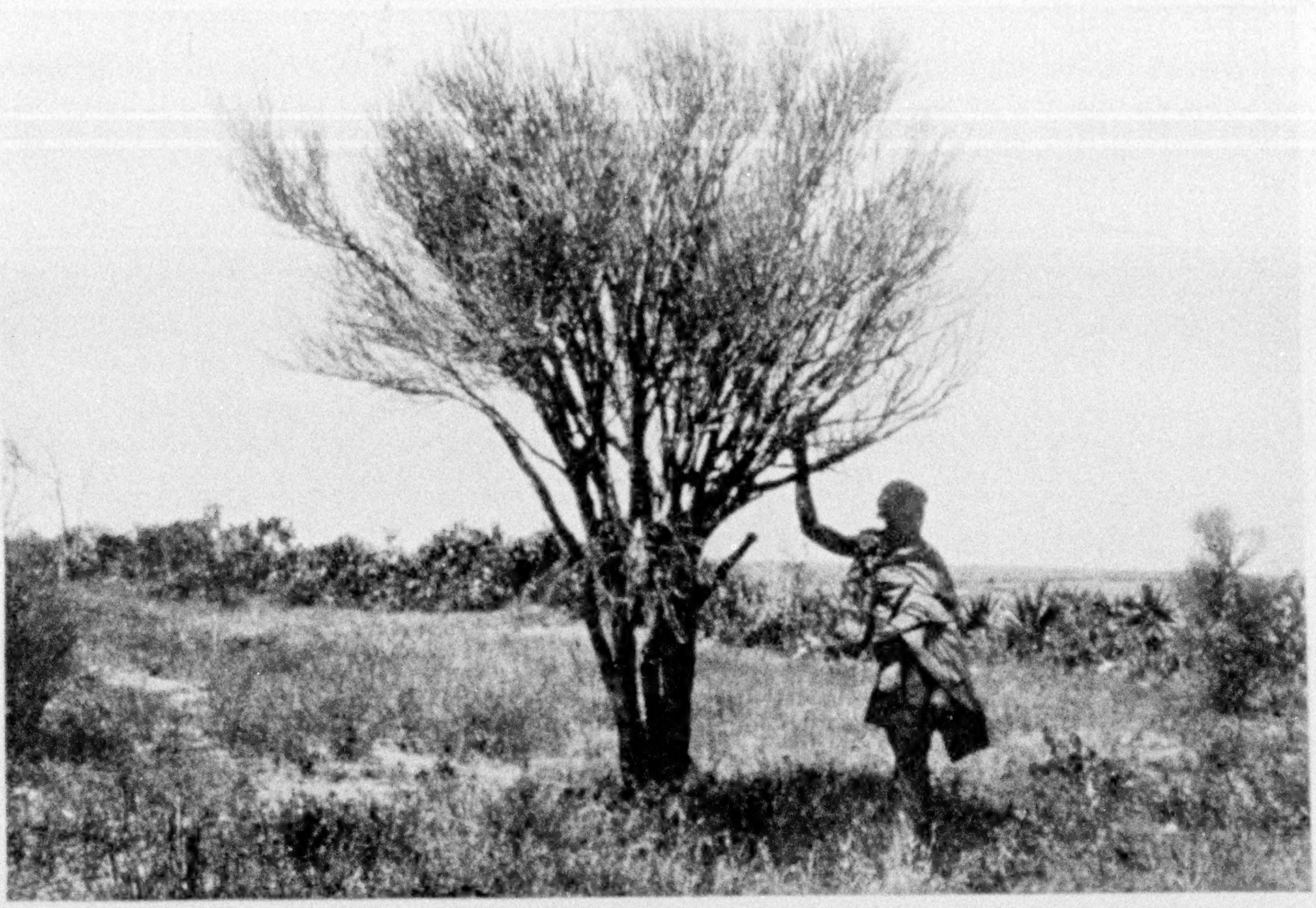
THE TRAVELER'S TREE HAS MANY USES

In the base of each leaf stalk is an ever-ready supply of fresh, cool water that is always welcome to the traveler, and the broad fronds are used as dishes from which the natives eat their rice (see text, page 183).



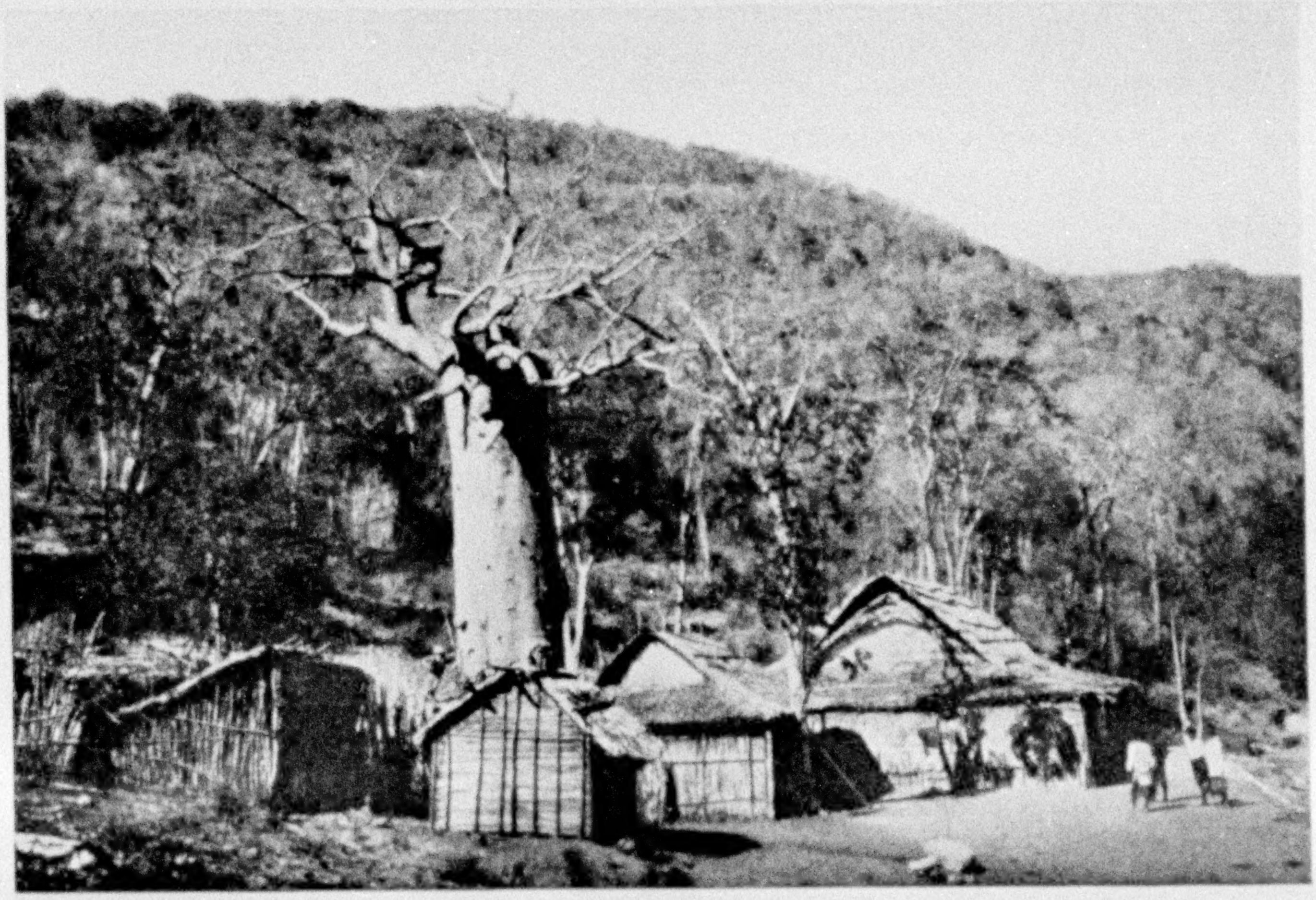
TREE EUPHORBIAS OCCUR IN ABUNDANCE IN SOUTHERN MADAGASCAR

If the American milkweed grew to the size of its close relative, the tall specimen shown here, the farmer would have to toil harder than he does now.



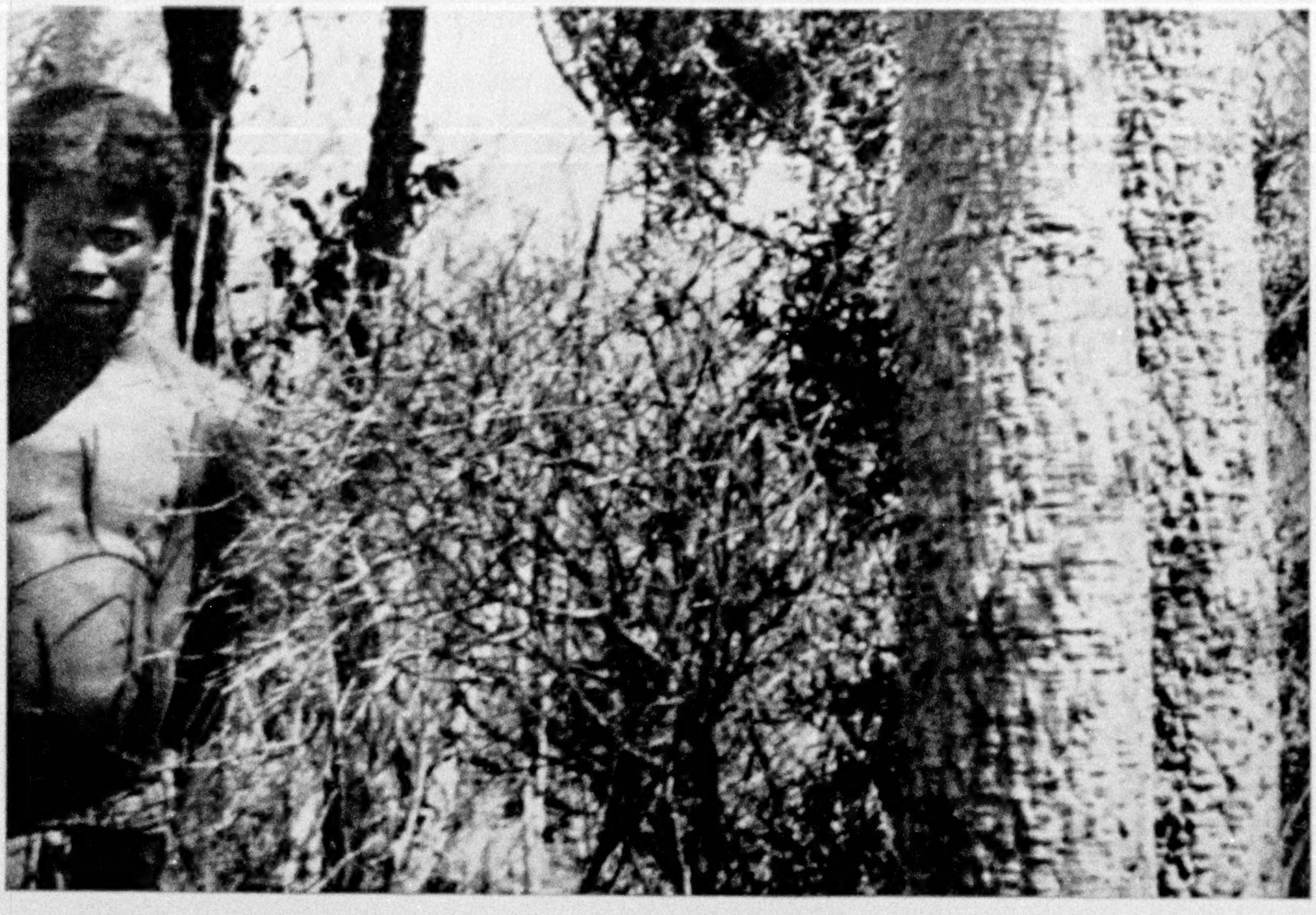
EUPHORBIA INTISY WAS THE REAL PRIZE OF THE EXPEDITION

This plant, formerly common in Madagascar, is now almost extinct. The high value of the rubber which the tree yields so excited the cupidity of the natives that they practically exterminated the species in their ruthless exploitation (see text, page 202).



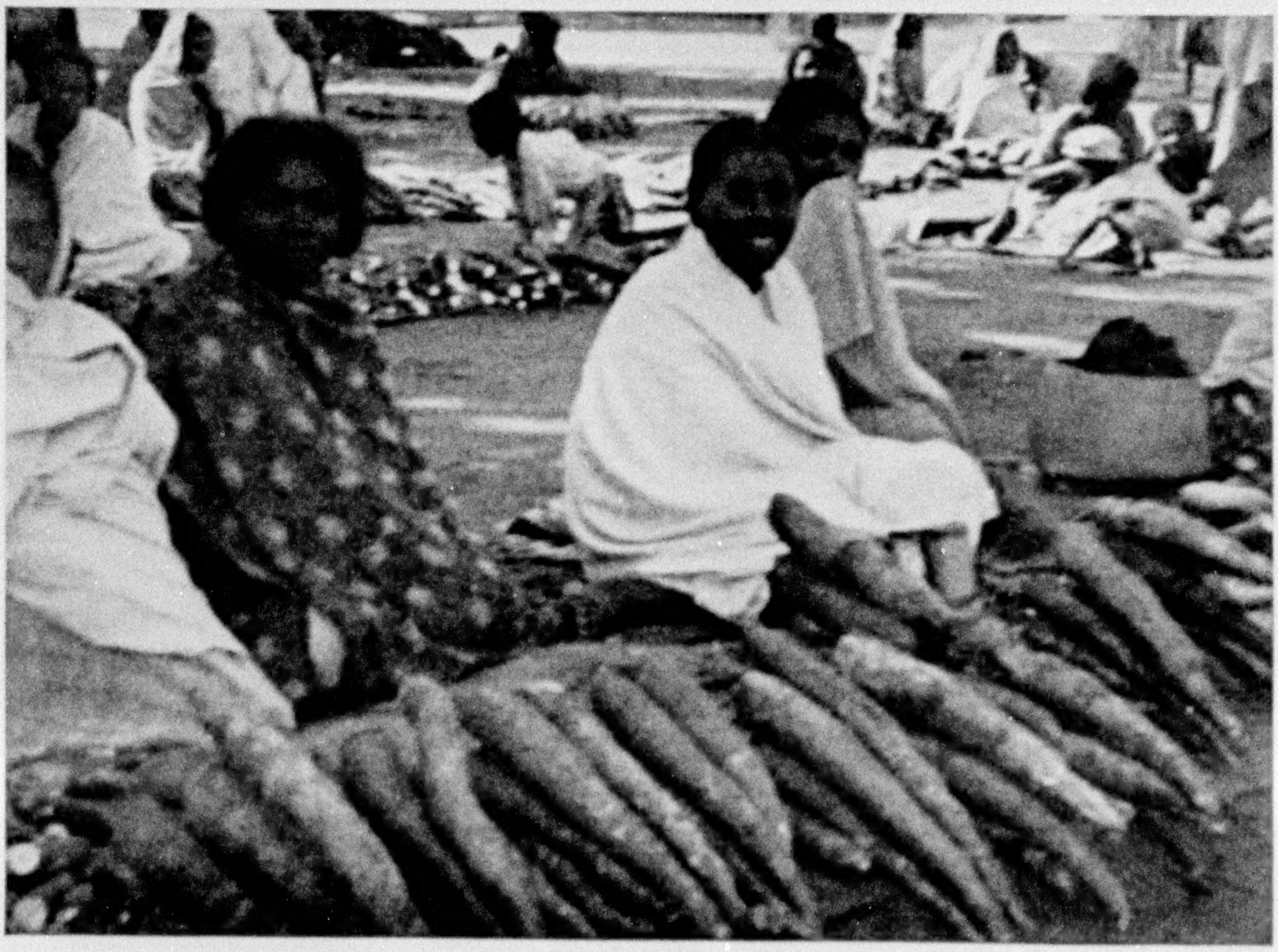
BOTTLETREES GROW 10 FEET THICK AND 20 FEET HIGH

The hollow trunk of this baobab is used as a community storehouse. The wood is pithy and valueless. The man leaning against the tree provides a "yardstick" by which to judge its size.



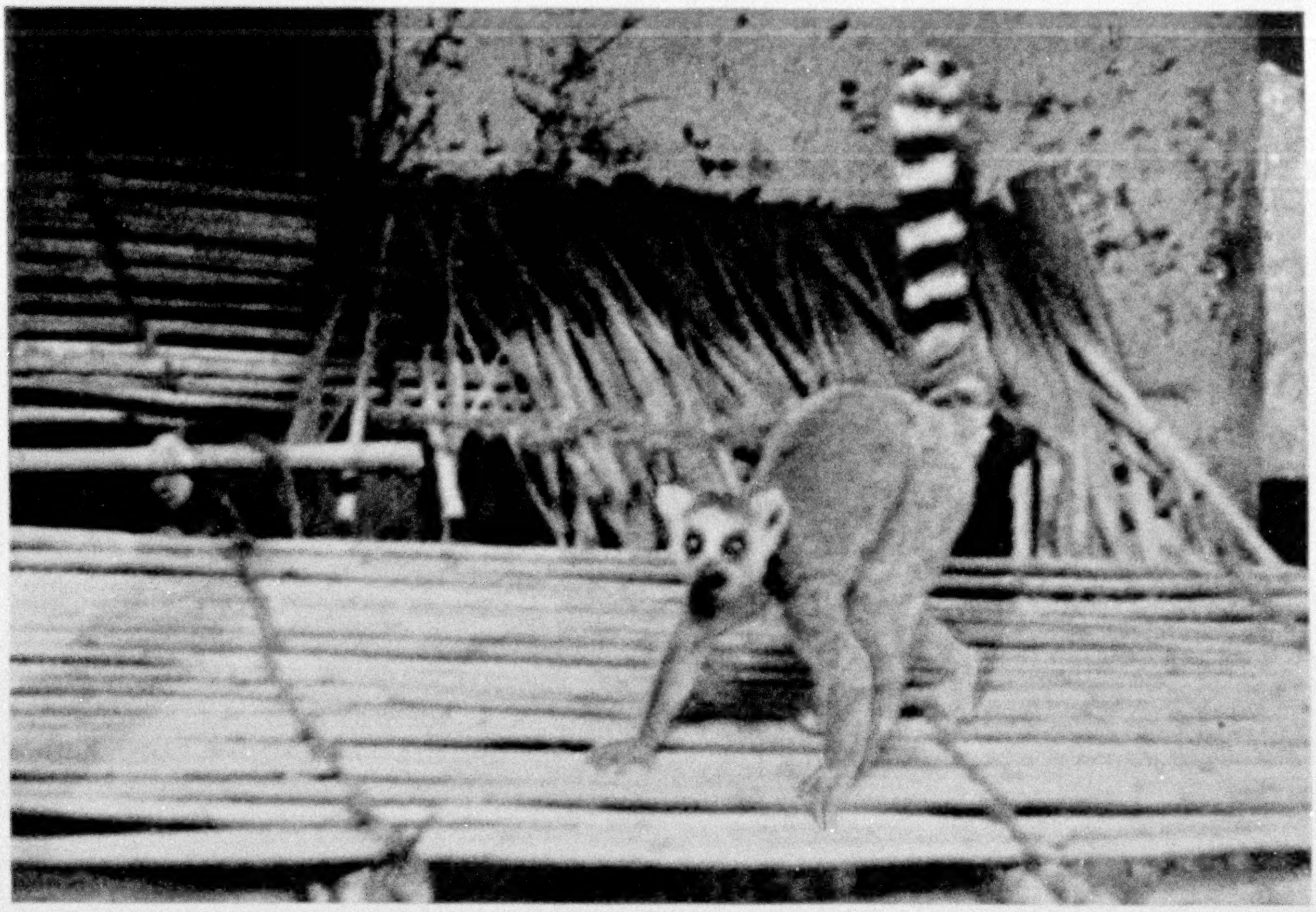
INTISY PLANTS ARE RARE AND HARD TO FIND

It was only after torturous travel over hostile deserts in southern Madagascar that the expedition came upon the real prize (see text, page 202), which is seen here (center) in its native habitat. At all times its slender, dark-green shoots are practically leafless.



TO THE MALAGASH, MANIOC SEEMS MANNA

This root, a favorite delicacy among the natives (see text, page 200), is eaten raw, boiled, or baked, and a sort of tapioca is made from it. In taste it is much like the potato.



THE LEMUR MAKES A DELIGHTFUL PET

Natives are fond of these sprightly little fellows, which they call *mackies*. The animals are so plentiful in Madagascar that the island was once known as Lemuria.

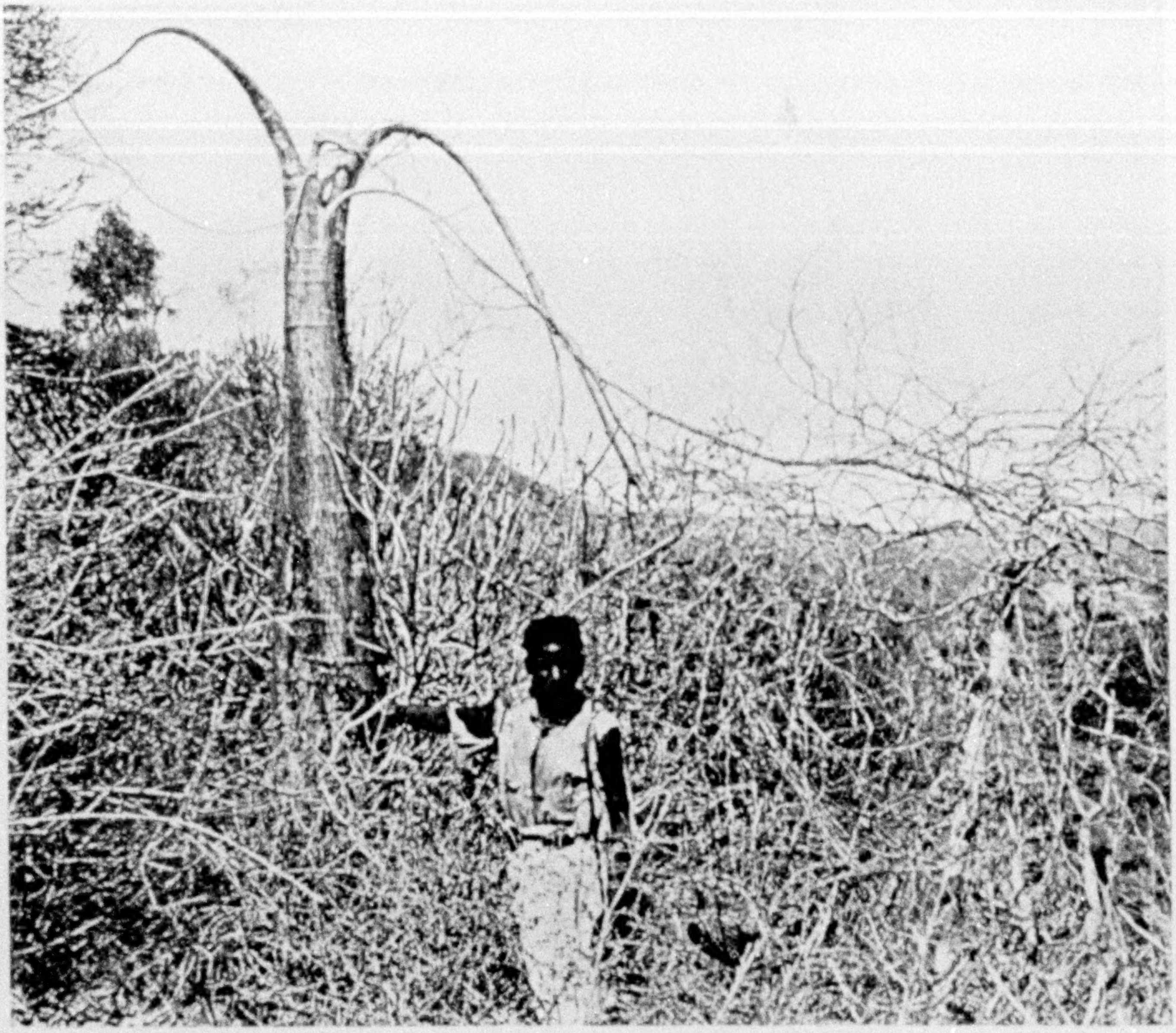
it in Ampanihy, not one car passed through the town, despite the fact that it lies on the only motor road crossing Madagascar from east to west. With the natives earning only 10 or 12 cents a day, it will be a long time before "term-purchase plans" will mean anything in the lives of the Malagash.

Here in Ampanihy I met one of the few Frenchmen in Madagascar who speak English. His seven years in this community he summed up indirectly in this remark: "I never write home now except on post cards. The climate is always the same, the people the same, everything the same, and it would be necessary to invent lies in order to write a letter; hence I stick to post cards."

One day we found a large tortoise not far from the village, and as we were dining with our English-speaking friend, we sent it to him as a present. We learned later that we nearly disrupted his household, for not one of his servants would kill it. The bad luck which would surely visit them if they should take this life was much more real to them than any of the bribes that were offered. Finally it was necessary to get a person outside the household to do the killing, after which the curse was off and the cook was perfectly willing to prepare the soup.

In Ampanihy I met a man who had been in Madagascar longer than any other white person I saw during my trip. He was an engineer, reared in England, who had spent 37 years on the island, almost all of it in the south. He it was who called my attention to an interesting story, first published in 1728—a tale as thrilling as our own "Robinson Crusoe." It is the journal of Robert Drury, an Englishman shipwrecked on the south coast of Madagascar in 1702 and held a slave in the southern region of the island for 15 years. Most of this time was spent not far from Ampanihy. Undoubtedly this weird tale has a large basis of fact, for no one could have imagined all that his journal contains.

A few hours after leaving Ampanihy we came upon one of the most dangerous stretches of road we had encountered. We had to ford the Menarandra River at



EVEN GRAPEVINES IN MADAGASCAR ARE QUEER

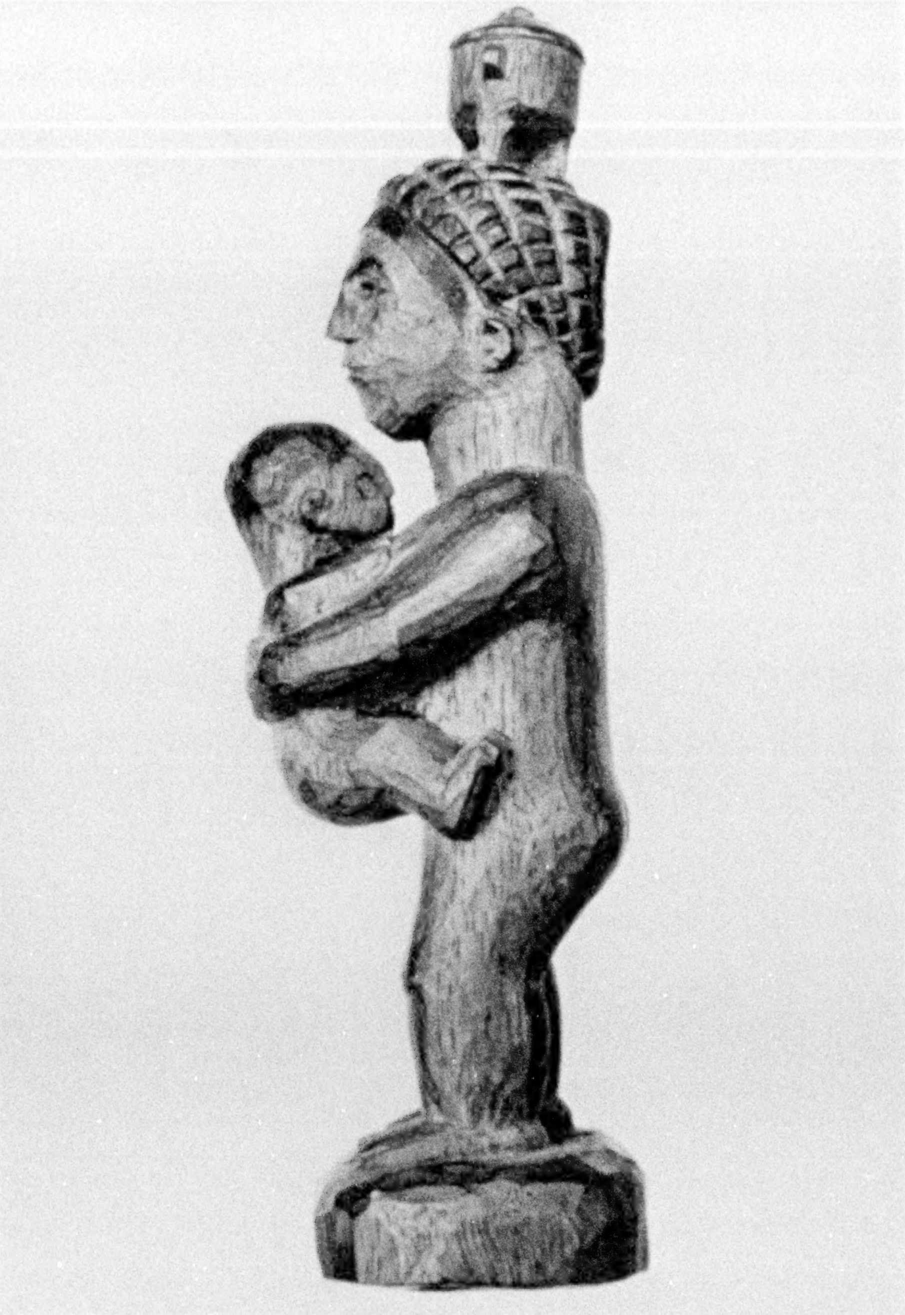
This Vitis, with its thick, hollow trunk, bears little resemblance to its more civilized cousins, and its fruit is not edible. Like the bottletree (see page 201) and other desert plants, it collects and keeps its own supply of moisture.

one of the most treacherous crossings in Madagascar. Natives from the near-by village, men and women, turned out to assist, and together we managed to push and pull our heavily laden truck across the stream and up the steep embankment on the other side.

We never failed to arouse great curiosity whenever we halted. As we first drove up to this stream and stopped at the water's edge, a dozen women ceased their work and collected in front of the truck to watch. I turned the movie camera on them and released the automatic spring. This seemed also to release the women's feet, for three seconds later all had run pell-mell into the water.

As we approached Fort Dauphin we entered the range of mountains which separate the brush of the south from the evergreen forest region of the east. Fort Dauphin, the seat of one of the first attempts at colonization made in Madagascar, was the end of the trail.

One winter's night, in my gay college days, I did a tedious job of chauffeuring for some returned missionaries, and as I walked home at 1 o'clock in the morning, leaving my automobile stuck in a snow bank, I firmly swore that I was "off" missionaries for life. Little did I think then that I would visit an American mission more than 10,000 miles from home. It is needless to say that, after spending months in a land where I could speak neither the language of the natives nor that of the colonial administrators, I appreciated the hospitality of the missionaries whom I found with headquarters here in Fort Dauphin.



Photograph by Robert Taylor

MAHAFALY WOOD-CARVING IS MODERNISTIC

A touch of realism is added to this figure of a woman by the representation of the indispensable iron kettle poised on her head. The hairdress is typical. Such "permanent waves" are kept in place by a thick coating of tallow (see, also, page 191).

Twenty-nine families of these American missionaries are stationed here in the south, their missions scattered throughout the entire territory. All are from Middle Western States and all are of Norwegian descent. They work in close coöperation with the Old World Norwegians, who have a number of missions throughout central Madagascar.

Several of these Americans have been here in the south for more than 30 years. These gospel pioneers were far too progressive to accept without a struggle the hardships and deprivations which they faced in this far-off land.

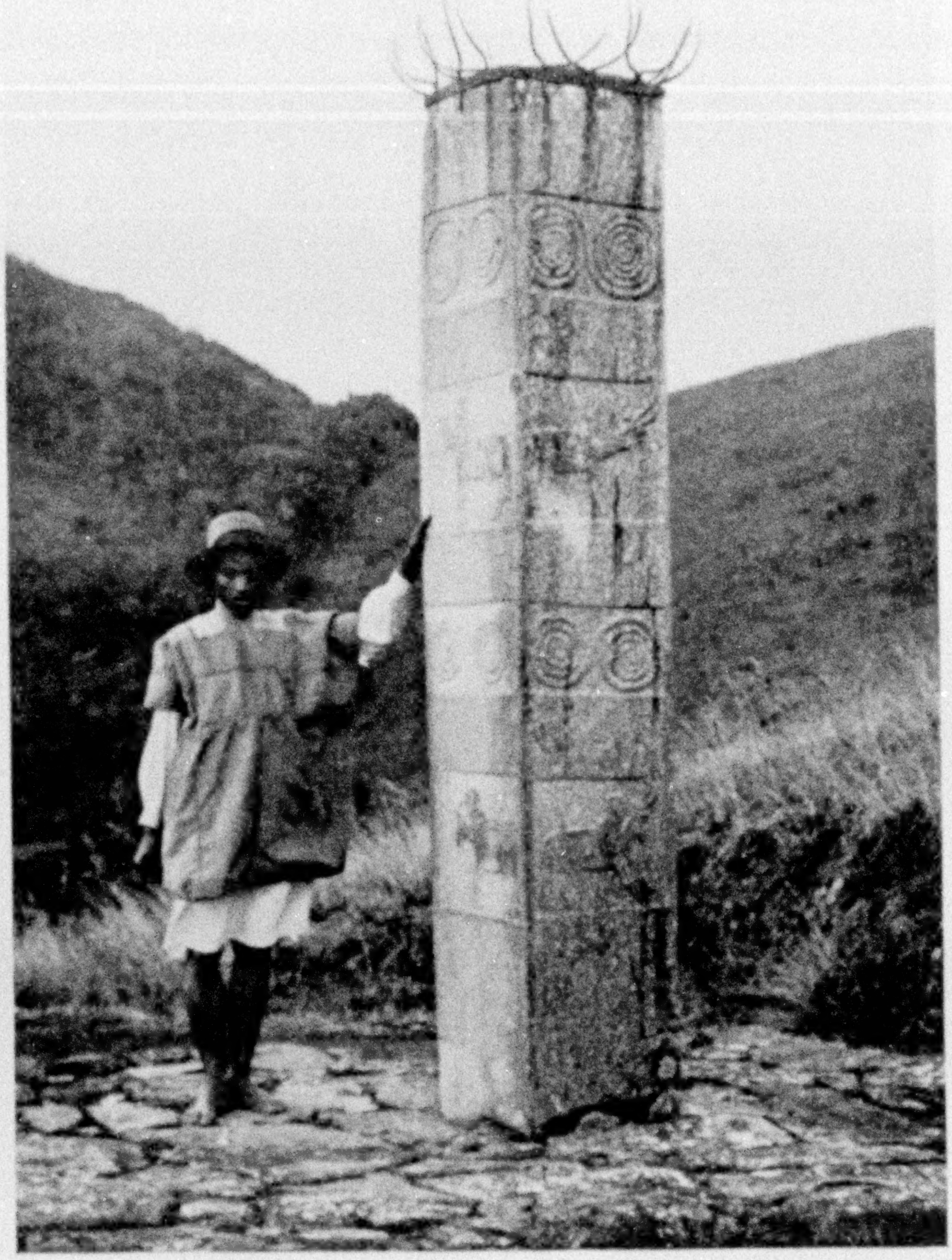
To do their best work, they realized that they must have decent living quarters and efficient means of transportation. I dare say that the comfortable homes, the automobiles and motorcycles which now form a part of their regular equipment—in short, the efficient manner in which these missionaries go about their daily tasks—make their teachings more than idle words to the Malagash.

These missionaries are by no means confining their efforts exclusively to religion. Classes in reading and writing, lectures on sanitation and health, demonstrations in many sorts of industrial work, are part of their daily schedule. The French recognize that they have had a great influence in establishing order in this part of Madagascar.

Two trips into the forests of the mountains overlooking the coast yielded me abundant moss for packing material for my plants. Here I tried to obtain pictures of the lemurs so often seen in Madagascar; but, like the natives, though very curious, they were afraid of my camera and I was unable to get close enough to take any good pictures of them (page 207).

From the hilltops we could see the lagoon just back of the shore line, where the rivers and the sea are fighting for supremacy. Often, I was told, it is possible to witness a more personal aspect of this fight, a life-and-death struggle between a representative of the sea, a shark, and of the river, a crocodile.

When I sent my chauffeur to obtain gasoline for our return trip north, he came back telling me that gasoline was *"tsy mish."* A search on my part, including an appeal to the chief administrator,



Photograph courtesy French Colonial Office

NATIVES TAKE PRIDE IN THEIR MONUMENTS

Often the Malagash devotes more time to preparing his tomb than to building and improving his house, for he reasons that he will pass a much longer time in the former. The man shown here wears a "coat" which once saw duty as a gunny sack.

but confirmed my chauffeur's report. It seemed I was doomed to wait two weeks, until a boat should arrive bringing gasoline. But I had accomplished the aim of my trip; for, in addition to the 1,500 different herbarium specimens I had helped Professor Humbert obtain, I had collected more than 100 lots of seeds and plants, including 23 rubber producers and many fine ornamentals, all potential additions to American agriculture. Thus I had all the plants I could handle on the return journey. Moreover, I had awaiting me a family on the other side of the world.

This stirred me to further action and led me again to the American missionaries, and once more with fruitful results. Hence, on September 18, I bade farewell to Professor Humbert and set out with my chauffeur in the familiar truck to make connections with the public bus, 400 miles to the north.

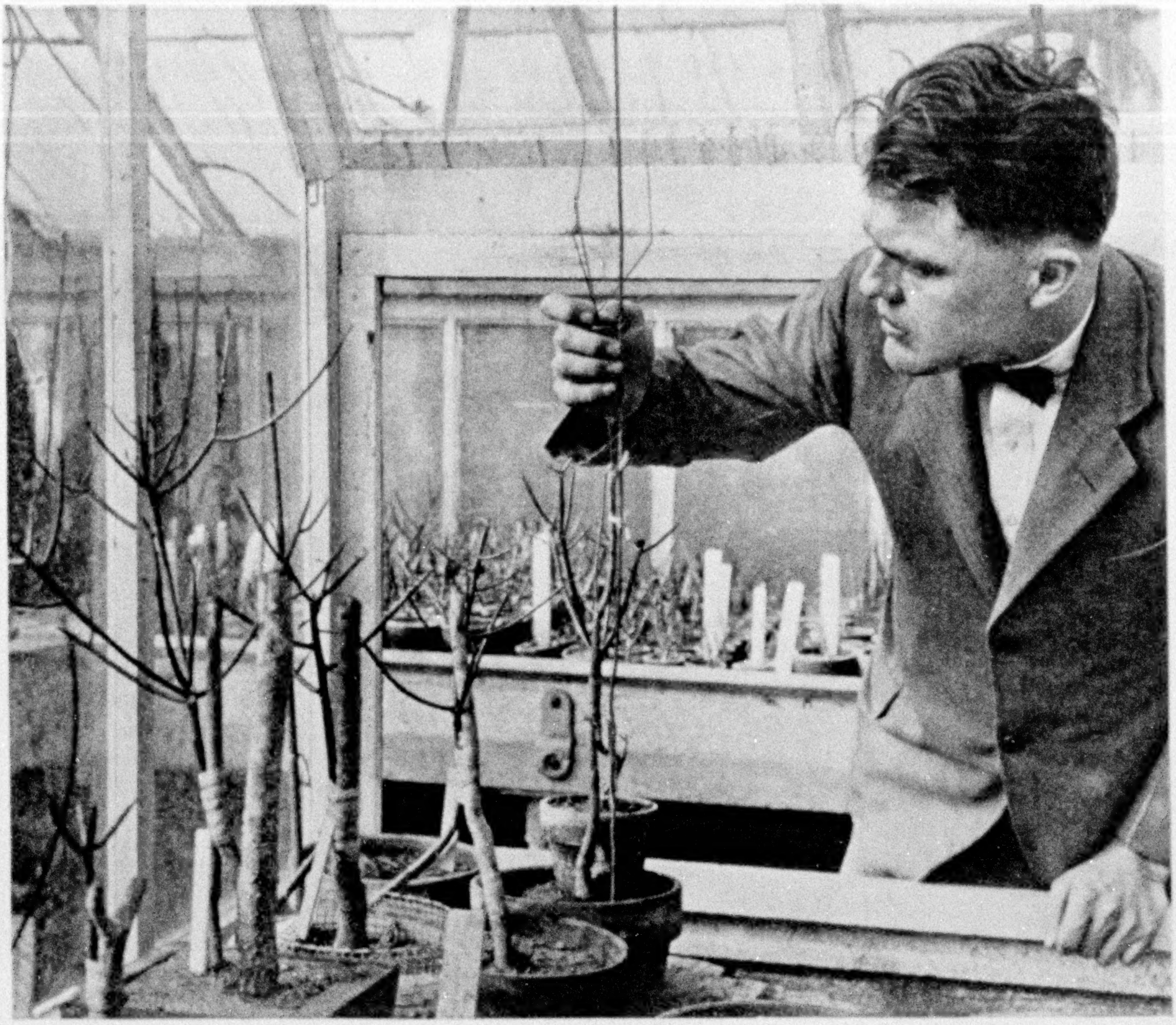
My chauffeur had asked that his brother, also a chauffeur, be permitted to accompany us. Since our trip lay through country devoid of gas stations or garages, I was only too glad to consent. I was more surprised than pleased, however, when, five hours later, lifting up the curtain behind the seat of the truck, I discovered two other passengers smuggled in by my chauffeur—one of them a 16-year-old Hindu girl.

AN 8-DAY JOURNEY IN ONE

In spite of our extra passengers, we traveled 250 miles on this first day out of Fort Dauphin, for we found the road, opened only a few days before, to be the best in Madagascar. I shall never forget the gasps and profound admiration which we elicited from the natives who helped us over our last bad river crossing that night. The fact that we had made this 8-day journey, judged by filanzana standards, in one day excited great wonder. In fact, to them this was a feat fully as remarkable as Lindbergh's famous flight was to the rest of the world.

Fortunately, I made prompt connections with the bus, and with my bulky cargo of living plants we journeyed to Tananarive.

To have been killed in a public bus in



BACK IN WASHINGTON, THE AUTHOR EXAMINES HIS PRIZES

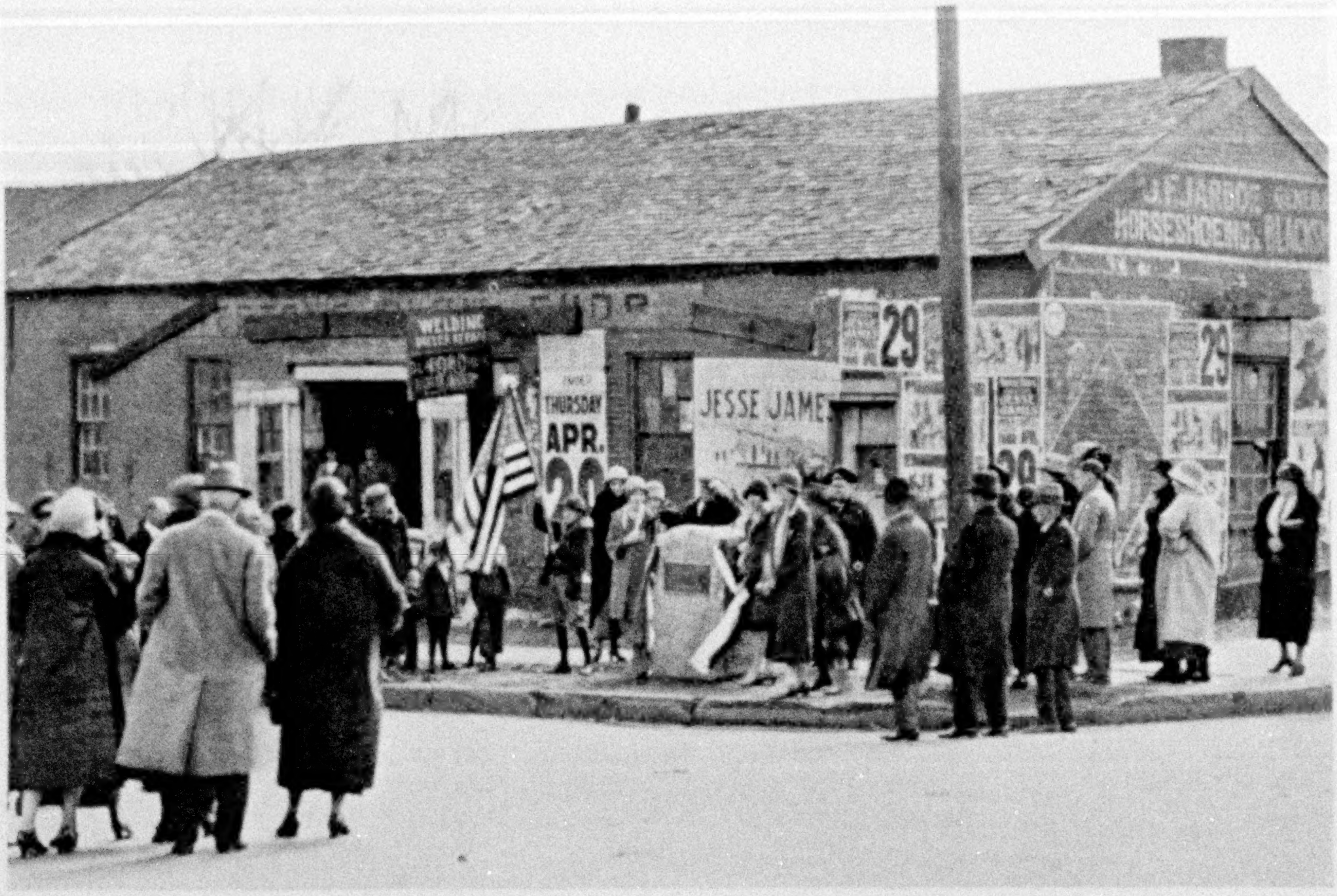
Intisy rubber plants are now thriving, far from their native soil, in the United States Department of Agriculture greenhouses. Specimens have been sent recently to stations in California and Florida. In these two States and Arizona it is hoped they will find ideal conditions for growth (see text, page 203).

Madagascar would, to say the least, have been prosaic; for here malaria, plague, leprosy, thirst, hurricanes, crocodiles, and other picturesque means to an end are available. Nevertheless I thought this was to be my fate when the steering rod of our machine broke and we wobbled perilously on the edge of a precipice. Except for this mishap, my trip to the capital continued without incident. In four and a half days I completed what is generally considered a three weeks' trip.

A day's train trip to the port, numerous details, such as getting my precious cargo on board ship, a few days of cruising along the coast, and Madagascar lay behind.

Seven weeks later I stepped ashore at New York. I doubt whether anyone ever walked down the gangplank of a first-class ocean liner with such a queer assortment of baggage as I. Conspicuous among the luggage of travelers from the Riviera were my eight miniature greenhouses and my battered trunks and suitcases, my awkward canvas bags and gunny sacks; yet far more precious in my eyes than the finest jewels which my fellow passengers brought with them was the living plant material which made up my unsightly array.

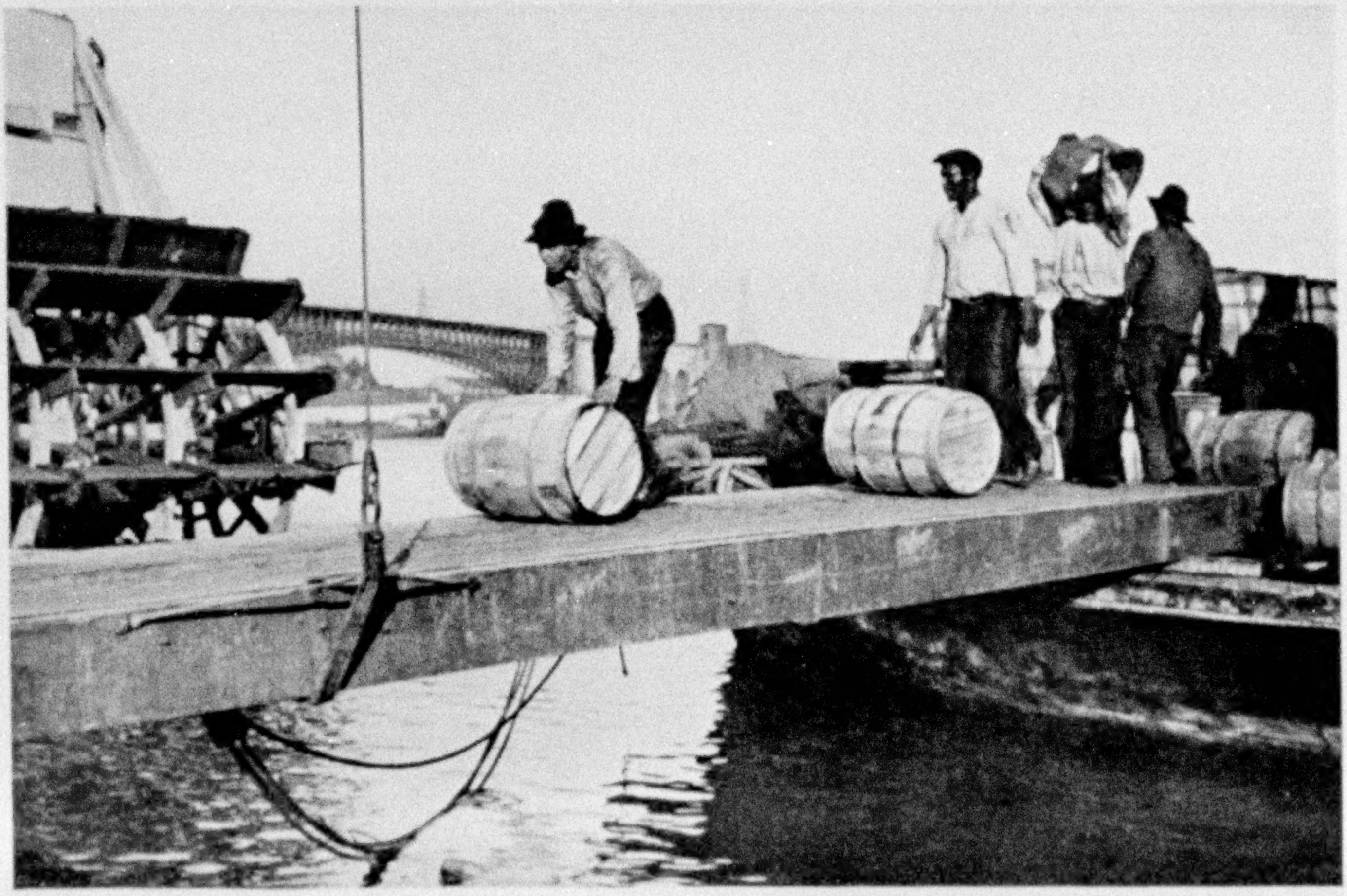
More intangible, but no less precious, are the memories I brought home from the strange land of Madagascar. Back in the pell-mell rush of the New World I pause, not to sigh for a return to the slow-moving life of the island, but to wish for a bit of the time which daily goes to waste in Madagascar.



Photograph from Grinter's Studio

IN THIS PIONEER BLACKSMITH SHOP OXEN AND MULES WERE SHOD A CENTURY AGO

Stages and ox-wagons halted for repairs here beside the Old Trail in Independence, Missouri. Daughters of the American Revolution dedicated this Trail marker three years ago (see text, page 217).



Photograph by C. P. Cushing from Galloway

ROUSTABOUTS UNLOADING BARRELS FROM A STEAM PACKET AT ST. LOUIS

For a time after Lewis and Clark, pack mules used the Boone's Lick Road from St. Charles, near St. Louis, up the Missouri River as far as Franklin. When steamboats came they carried freight to Franklin and beyond for transshipment to the Santa Fe Trail. Over this road passed many of the pioneers into the country west of the Mississippi.

THE SANTA FE TRAIL, PATH TO EMPIRE

BY FREDERICK SIMPICH

AUTHOR OF "ARIZONA COMES OF AGE," "MISSOURI, MOTHER OF THE WEST," "SO BIG TEXAS," ETC., ETC., IN THE NATIONAL GEOGRAPHIC MAGAZINE

"I WILL pay 1¢ for the return of the apprentice, Kit Carson, who ran away from my harness shop in Franklin, Missouri. . . . He is 16, small for his age, and has light hair. . . . DAVID WORKMAN."

One day in 1826 that notice, in substance, ran in the *Missouri Intelligencer*, printed in the carousing pioneer river town whence Kit had fled.

But Kit never went back—to the harness shop. Instead he joined the wagon trains for Santa Fe across the Plains. High adventure called then. America was in the making. Twenty States were yet to be carved from the vast, mysterious, unmapped world beyond the Mississippi. Who could sit astride a saddler's bench and ply an awl when fur traders were conquering half a continent and battling whites deemed it only fair to "lift the hair" of fallen Indian foes!

No wonder Kit Carson and others of his kind quit the workbench, the field, and forge to trap beaver, shoot buffalo, and scalp Indians on the long trail into the setting sun. Even then, 100 years ago, man's increasing control over Nature was making him independent of geographic obstacles. Prairie schooners steered by compass. Mexico, freed from Spain, was eager for Yankee goods. Over the long Santa Fe Trail commerce had already begun. St. Louis traders, braving the unknown, hauled calico and tools overland for 1,600 miles, for sale at Chihuahua. Men got rich on one round trip.

A BIG PARADE OF THE GREAT

In all the world, never such a path to empire!

Across a virgin land it stretched, a hard, hoof-worn highway, often 100 feet wide, so beaten and packed that for years afterward it couldn't be plowed, and with not a white settlement on its whole savage-haunted length. On buffalo meat alone the plainsman often lived, and from green hide he made clumsy, sacklike boots to save oxen feet from stones and hot sand. Fifteen miles was a good day's march.

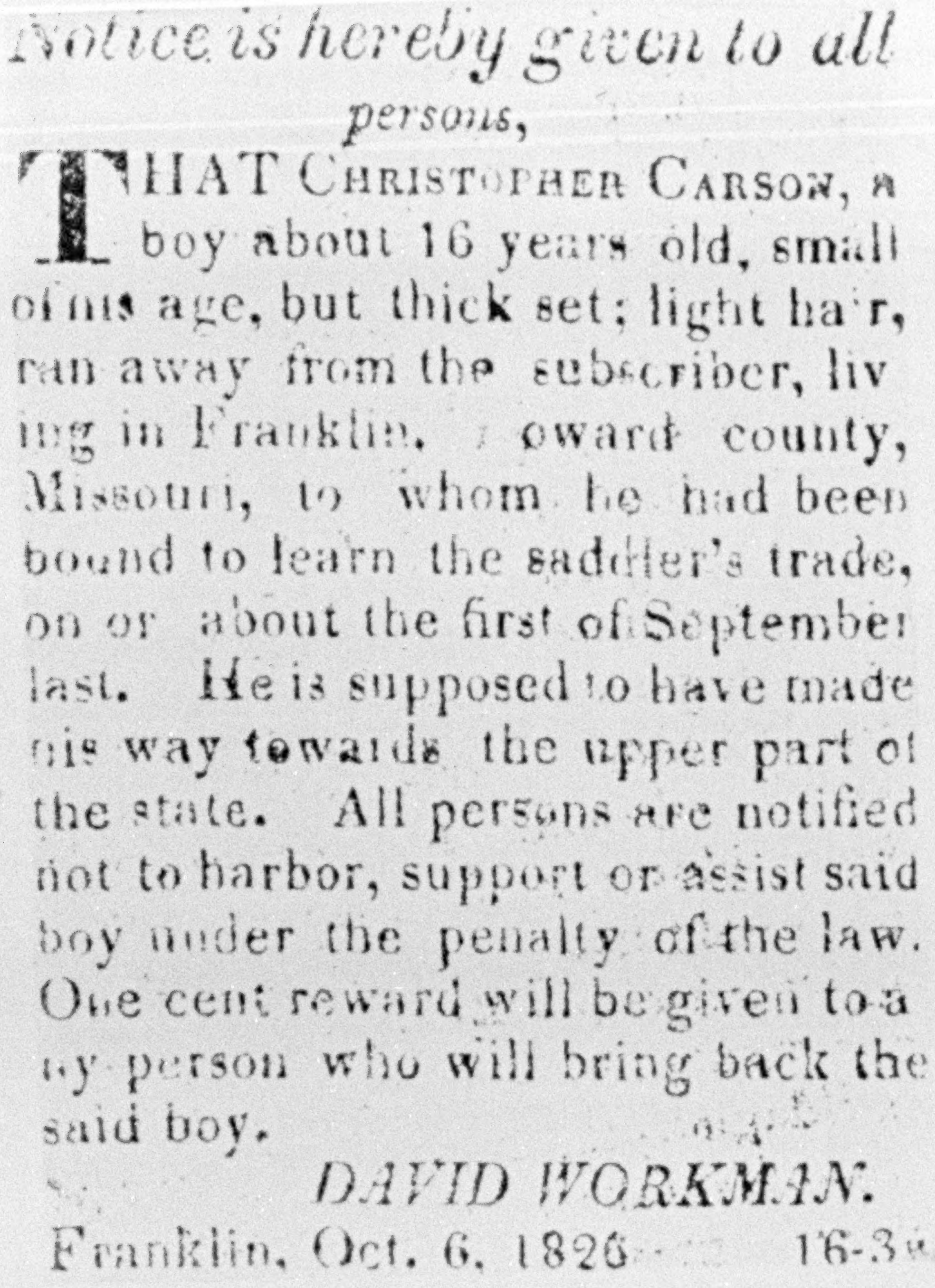
Pike passed this way to find the Peak, to be made captive and imprisoned at Chihuahua, and to picture with singular, prophetic accuracy that vast commerce which was one day to arise with Mexico. Frémont, the Pathfinder, came, and Stephen Kearny, to conquer California; and Buffalo Bill, Crook, and Miles, Hancock, Sherman, Sheridan, and Greely; Calamity Jane, Wild Bill Hickok, and Henry M. Stanley. A Big Parade truly, and in it Custer, the Curlyhaired, slain with his Seventh Cavalry troopers that fateful June day on the Little Horn.

And over this amazing pathway of the Plains drove the longest wagon trains the world ever saw, trains often miles long, with four and even eight creaking wagons rumbling abreast. What a colossal traffic it was, pushing out to win the West! At its peak, 3,000 wagons and 50,000 ox yokes used in one season!

WHEN FRANKLIN SEETHED WITH EXCITED MEN

Franklin, in Kit Carson's youth, was the outpost of civilization. St. Louis, with 4,000 people, was the only other large town in Missouri. From there clumsy boats, battling sand bars, snags, and muddy whirlpools, their passengers often firing at deer or wild turkeys on the wooded river banks, beat upstream to Franklin, where the Santa Fe Trail then started.

Franklin boomed with the fur trade. It fairly seethed with excited men. Oxen bawled; mules kicked and grunted. Through mud and dust of the crude town's crowded streets creaked heavily loaded wagons of Conestoga type, canvas-topped, schoonerlike wagons, loaded with bolts of calico, ginghams, velvets, cotton goods, cutlery, firearms, tools, and light hardware, and drawn by four or five pairs of oxen or mules; and, breasting this westbound stream, up from Santa Fe, from El Paso, even from far Chihuahua, pack trains came drifting in, laden with Mexican silver, with beaver plews and buffalo robes. Big-hatted, swarthy "Spanish" men in red



Notice is hereby given to all persons,

THAT CHRISTOPHER CARSON, a boy about 16 years old, small of his age, but thick set; light hair, ran away from the subscriber, living in Franklin, Howard county, Missouri, to whom he had been bound to learn the saddler's trade, on or about the first of September last. He is supposed to have made his way towards the upper part of the state. All persons are notified not to harbor, support or assist said boy under the penalty of the law. One cent reward will be given to any person who will bring back the said boy.

DAVID WORKMAN.

Franklin, Oct. 6, 1826 16-3w

AN ADVERTISEMENT IN THE FRANKLIN "MISSOURI INTELLIGENCER"

Scout, fur trader, pioneer in the conquest of the West, brigadier general in the United States Army—such was the brilliant destiny of Kit Carson, for whom a reward of one cent was once offered! (See, also, text, page 213, and illustration, page 215.)

blankets and tight trousers—men who fought with knives and spoke a purring tongue strange to Missouri folk—mingled with returning caravans.

Sunburnt, long-whiskered traders and trappers in buckskins and moccasins came back from the West to brag of their adventures and scatter their quick-earned profits. They made the river bottom ring with nightly wassail, with rough-and-tumble fights. Their tall tales of treasure, of quick fortunes in beaver pelts, of boisterous fandangos and smiling señoritas in romantic Santa Fe, roused the envy of stay-at-homes.

One early Missouri trader, Capt. William Becknell, came back with a whole mule train loaded with silver pesos. When he dumped his money bags in a Franklin warehouse they burst open and money fairly covered the floor. Nobody had ever seen so much.

No wonder Kit Carson ran away!

Rich St. Louis bankers, stirred by news of big profits in the newly opened Santa Fe trade, rubbed elbows in Franklin with buckskinned mountain men and returning freighters. And in all men's mouths were new place names—Yellowstone, Columbia, Taos, Rio Grande. America was in the making. Seattle, Denver, San Francisco—they had yet to be built and christened. The Yosemite, the Grand Canyon, Salt Lake—the East had never even heard of them. Hardly a handful of white settlers then where millions now make their homes. Arizona, Nevada, California—their stupendous wealth of gold, silver, and copper was not even suspected.

FADING FRANKLIN, ONCE AN OUTPOST OF EMPIRE

Yet, in all the history of civilization, no region was ever to see such swift and amazing transition from wilderness to populous empire of richness and power. It can never happen again; no empty place is left on earth where it could happen.

CHRISTOPHER CARSON

Photograph by O. E. Aultman

BRONZE EQUESTRIAN STATUE OF KIT CARSON AT TRINIDAD, COLORADO

The fame of this one-time saddler's apprentice (see illustration on opposite page) is forever linked with the Santa Fe Trail. Through his intimate knowledge of Indian traits and language, he rendered invaluable service for many years to early settlers in the Southwest. A vast deal of legend attaches to his name.

To-day a speedy motor highway ties St. Louis to Kansas City. It sweeps through fading Franklin, where in Kit Carson's youth the Trail began. Over it parlor busses hum, running as far in 20 minutes as ox teams went in a day. Now men watch market reports or play golf where their forbears watched for Indians or tinkered with mink traps.

From a spot near where young Kit Carson stitched horse collars and bellybands a big highway bridge leads off to span the Missouri. Here busses and motor tourists stop for gas. Men get out to stretch their legs or buy a ginger ale. Across the Big Muddy stands Boonville, named for Daniel, whose sons whittled ramrods from Missouri hickory and made salt from the deer licks, packed it in hollow logs, and floated it down to St. Louis.

Far outpost of empire Franklin was in those exciting days. It saw the cheering legions pass. But now its symphony of life is lulled. Long ago the hungry river claimed most of it.* Few, indeed, of the hastening host who pause now for hot dogs or cigarettes even dream what stirring scenes were staged here when the Mexican flag still waved from western Kansas to California.

Yet its name, like Daniel Boone's and Kit Carson's, endures in the annals of the West.

As for the Trail itself, sweeping on from the Big Muddy to ancient Santa Fe, now it is busier and better than ever. Railroads and motor highways, paralleling its course, handle to-day's vast commerce. Now millions ride in speed and safety where pioneers beat their stubborn way against thirst and hunger, daring torture and death in the forays and ambuscades of Pawnees, Kiowas, Cheyennes, Comanches, Osages, and Arapahoes.

Where millions of buffalo rocked the Plains with the thunder of stampeding hoofs and died from arrows, spears, and

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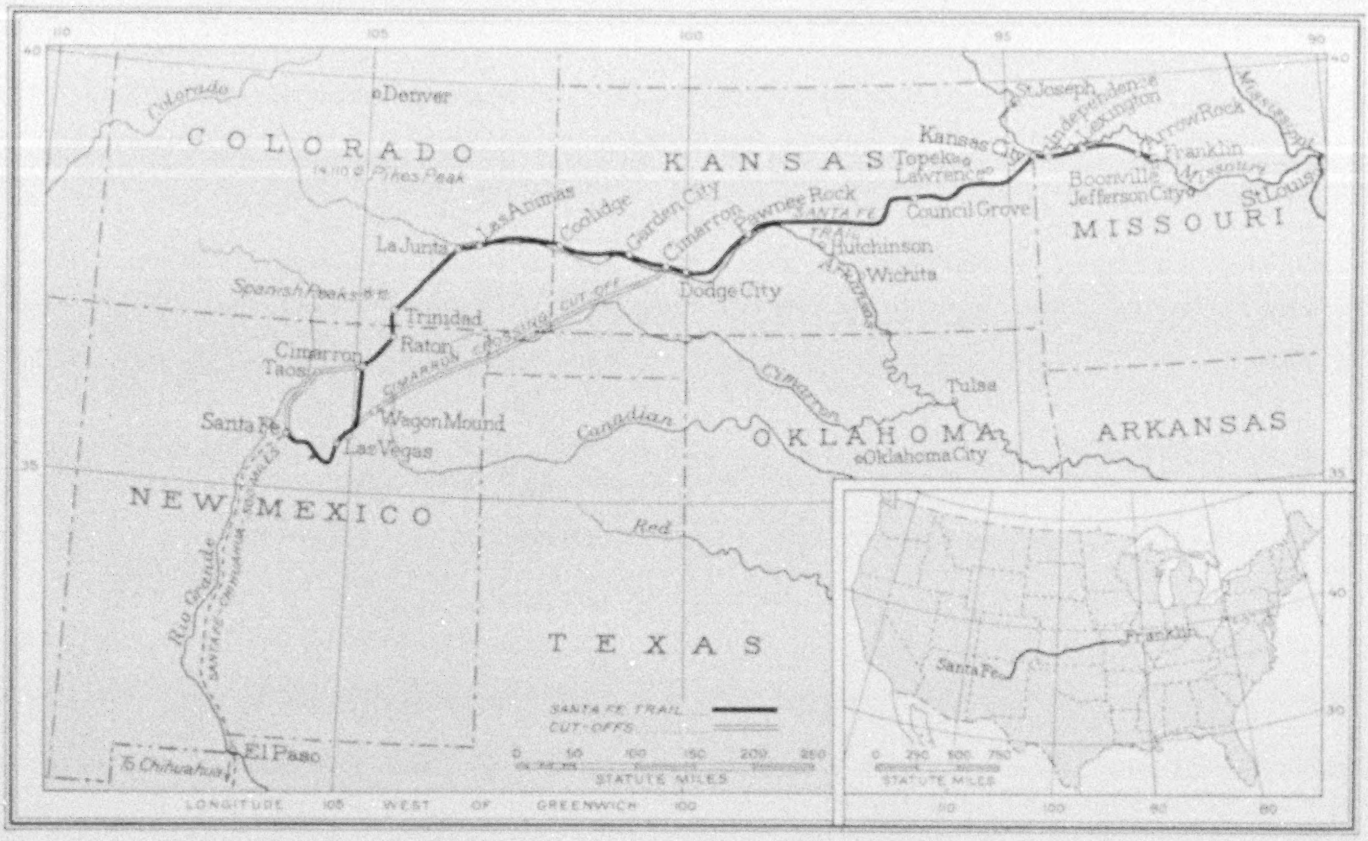
* See, also, "Trailing History Down the Big Muddy," by Lewis R. Freeman, in the NATIONAL GEOGRAPHIC MAGAZINE for July, 1928.


COLORADO
KANSAS
MISSOURI
OKLAHOMA
ARKANSAS
NEW MEXICO
TEXAS
Denver
Pikes Peak
Spanish Peaks
La Junta
Las Animas
Coolidge
Garden City
Cimarron
Pawnee Rock
Dodge City
Hutchinson
Wichita
Council Grove
Topeka
Lawrence
Kansas City
St. Joseph
Independence
Lexington
Arrow Rock
Franklin
Boonville
Jefferson City
St. Louis
Trinidad
Raton
Cimarron
Taos
Santa Fe
Las Vegas
Wagon Mound
Tulsa
Oklahoma City
El Paso
To Chihuahua
Rio Grande
Canadian
Red
Arkansas
Cimarron
Mississippi
Missouri
Colorado
Santa Fe Trail
Cimarron Crossing Cut Off
Cimarron Cut Off
Santa Fe-Chihuahua Trail
SANTA FE TRAIL
CUT-OFFS
STATUTE MILES
LONGITUDE WEST OF GREENWICH
Santa Fe
Franklin

Drawn by James M. Darley

THE PATH OF EMPIRE BLAZED BY THE SANTA FE TRAIL

From Franklin, Missouri, to Santa Fe, New Mexico, it cut across the Plains for a distance equal to the airman's route from New York to St. Louis.

rifle balls, now millions of meat-bearing animals lift bovine faces to stare at passing trains and motor cars—slow-moving, safe in fenced fields, chased by no wolves, Indians, or hungry white men on horseback.

Windmills, wells, city water systems—lots of water now where men wild with thirst once vainly dug with bleeding fingers in dry stream beds, or walked out on parched plains to lie down quietly and die.

A 96-year old freighter on this Trail was a friend of mine when I was a boy in Missouri. His favorite yarn concerned a white man who got knocked down and scalped, but who, by sheer luck, shot his Indian assailant and retrieved his own scalp. This he put in a bucket of water to keep it fresh and carried it four miles back to a village. But they couldn't make it grow fast again.

"Axle grease used to get so scarce," this veteran told me, "our dry wagon wheels squeaked and squealed like animals in a trap. Sometimes we didn't have even enough grease to rub on a mule's sore back to keep the flies off." Now Kansas yields oil, and pipe lines carry oil from Wyoming, across the Old Trail, and clear down to Texas—shiploads of it. Now motors stall where mules used to balk, and tires go flat where oxen went lame or got sick from "losing their cuds."

FROM WARPATH TO BEAUTY PARLOR

Kit Carson would find lots of changes, could he come back. "Lifting hair," as he called operations on the scalp, is practiced now only in the beauty shops of towns along the Trail. It is not easy now to trade glass beads or cheap firearms for hunks of virgin silver in Santa Fe; nor would the town cheer a mule driver arriving from Missouri or call a holiday should a drygoods peddler arrive.

The ancient tree-lined plaza, where pioneer freighters ended their long trip across the Plains and unloaded their big wagons, is still the center of life in Santa Fe. At evening time, when soft breezes sigh among the trembling elm leaves, the local señoritas, dark-eyed and flirtatious, promenade this ancient plaza and smile as ravishingly as in Kit Carson's romantic day. But none of them would leave home now for a red-headed beaver trapper, as Inez did in "Death Comes to the Archbishop," even if the trapper *had* licked every other rival at the fandango.

To see what life is like now along this

FIRST COURT HOUSE of JACKSON COUNTY
COMMUNITY WELFARE

Photograph by Ewing Galloway

ONE OF THE OLDEST BUILDINGS IN THE MISSOURI VALLEY

This little two-room cabin of hewn logs was built in 1827 as the Jackson County Courthouse. It stands at Independence, Missouri, from which three great trails—the Santa Fe, the California, and the Oregon—led to the West.

100-year-old pioneer path, I followed it from Missouri to New Mexico.

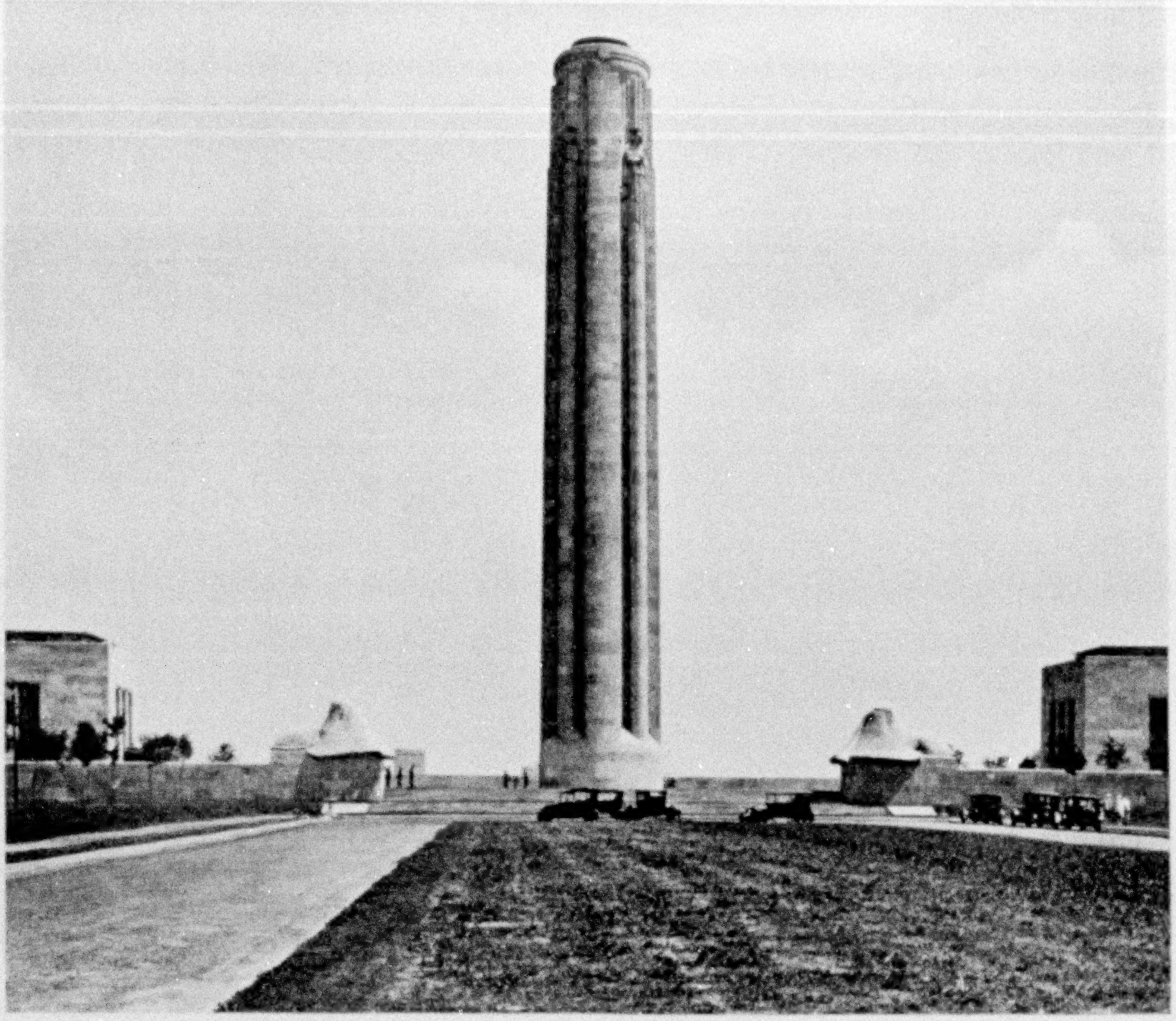
Originally the Trail ran upstream from Franklin, crossed the river at Arrow Rock, and stretched west through what is now Lexington and Independence, Missouri (see map, page 216). A rich region this, where, as settlers multiplied, a vigorous culture developed, with its familiar homemade walnut furniture, ash hoppers, big soap and sorghum kettles, looms, and spinning wheels.

THE FUNNEL FOR EARLY WESTERN TRAVEL

To-day, where Washington Irving saw myriad prairie chickens, or "parrokeets," as pioneers called them, one passes big pens of white leghorns. Endless "Old Trail" garages take the place of wayside blacksmith shops, where former pilgrims stopped to shoe a horse or set a tire. Where slaves tended hemp and tobacco, big dairy plants are busy now, their painted barns and silos replacing the weather-beaten tobacco sheds of other days. Descendants of the slaves are here, but dwindling fast, moving to the cities, as power machines free man more and more from farm drudgery.

As commerce grew, boats pushed farther up the Missouri, passing Franklin. By 1831 Independence became the starting point for traffic across the Plains. Plying the river then was one Government-owned boat used for exploring, the *Western Engineer*. An early narrative says: "In place of a bowsprit she has carved a great serpent, and as the steam escapes out of its mouth it runs out a long tongue, to the perfect horror of the Indians."

Independence, in its palmy days, was the funnel through which westward travel poured. From here went not only Santa Fe traders, but Mormon trains for Utah and the thousands of covered wagons for the long Oregon Trail to the Northwest. In "The Western Guide Book and Emigrant Directory" for 1849 is a rude map, showing all the great overland trails as starting from Independence, Missouri; but the big blank spots on this map and its meager details reveal how little we knew



Photograph from Roy Godsey

LIBERTY MEMORIAL TO THOSE GONE WEST

In memory of men dead in the World War, this shaft, simple yet powerful, rises high in Kansas City skies (see, also, page 219). Across the Old Trail, too, its shadow falls, honoring that other valiant host long ago "gone west" in the conquest of the Plains. On top of this monument, by a special device, an illusion of eternal fire is created.

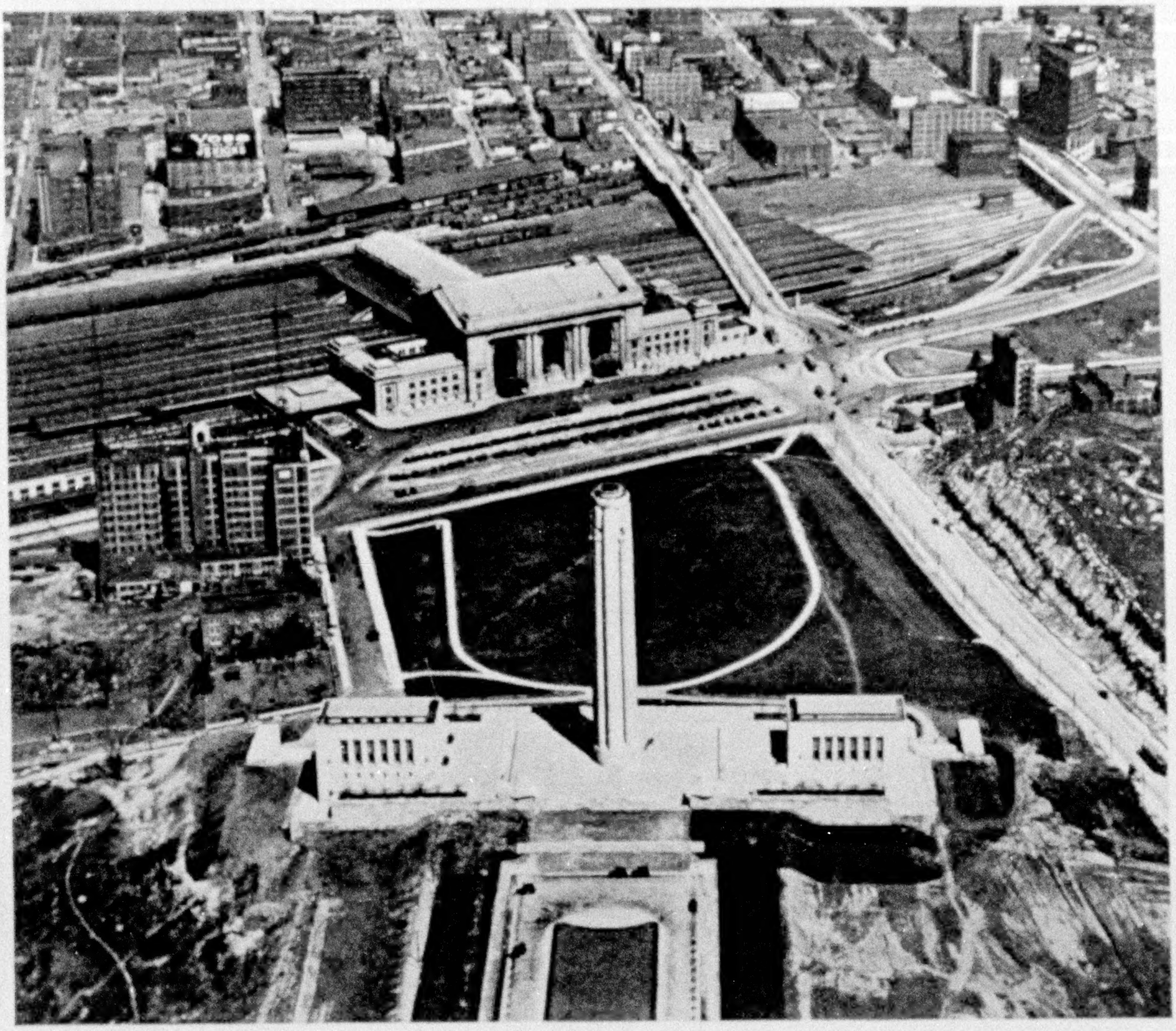
of our western country only 80 years ago. In the backyard of one pioneer Independence home, stored away in an abandoned barn, I saw an old stagecoach with leather springs. I got in and rocked it and tried to imagine how it might once have bounced over the Old Trail when chased by bandits or Indians. In faded letters on its side were the words "Western Overland Mail."

Copies of *The Western Expositor,* printed at Independence in the early 1840's, were shown to me there. The editor's motto was: "I have sworn upon the altar of God eternal hostility against every form of tyranny over the mind of man."

In this same paper was a description of Frémont's departure on his famous western expedition, and news of traffic and Indian fights on the Trail.

In another early newspaper I found signs that nature fakirs were busy even in pioneer times.

A singular fight between a hunter and a buffalo was described. The hunter, said the item, left camp with a pistol to shoot rabbits for an evening stew. At a moment when his weapon was empty a buffalo bull suddenly rose from a hidden wallow and charged. In fright, the hunter dodged; then leaped high in air to escape the lowered head of the charging bull. By sheer luck he alighted in the animal's long mane, astride its neck! There, holding with one hand, he used his other hand and teeth to load his pistol. Then, placing the



Photograph by Ewing Galloway

"K. C., CROSSROADS OF THE CONTINENT," BARTERS WITH THE PLAINS

In the foreground, towering above Union Station, rises the great stone World War Memorial. Dedicating it November 11, 1926, President Coolidge said: "It has not been raised to commemorate war and victory, but rather the results of war and victory which are embodied in peace and liberty."

gun against the big bull's ear, he fired, killing the buffalo and "escaping with only a bad fall."

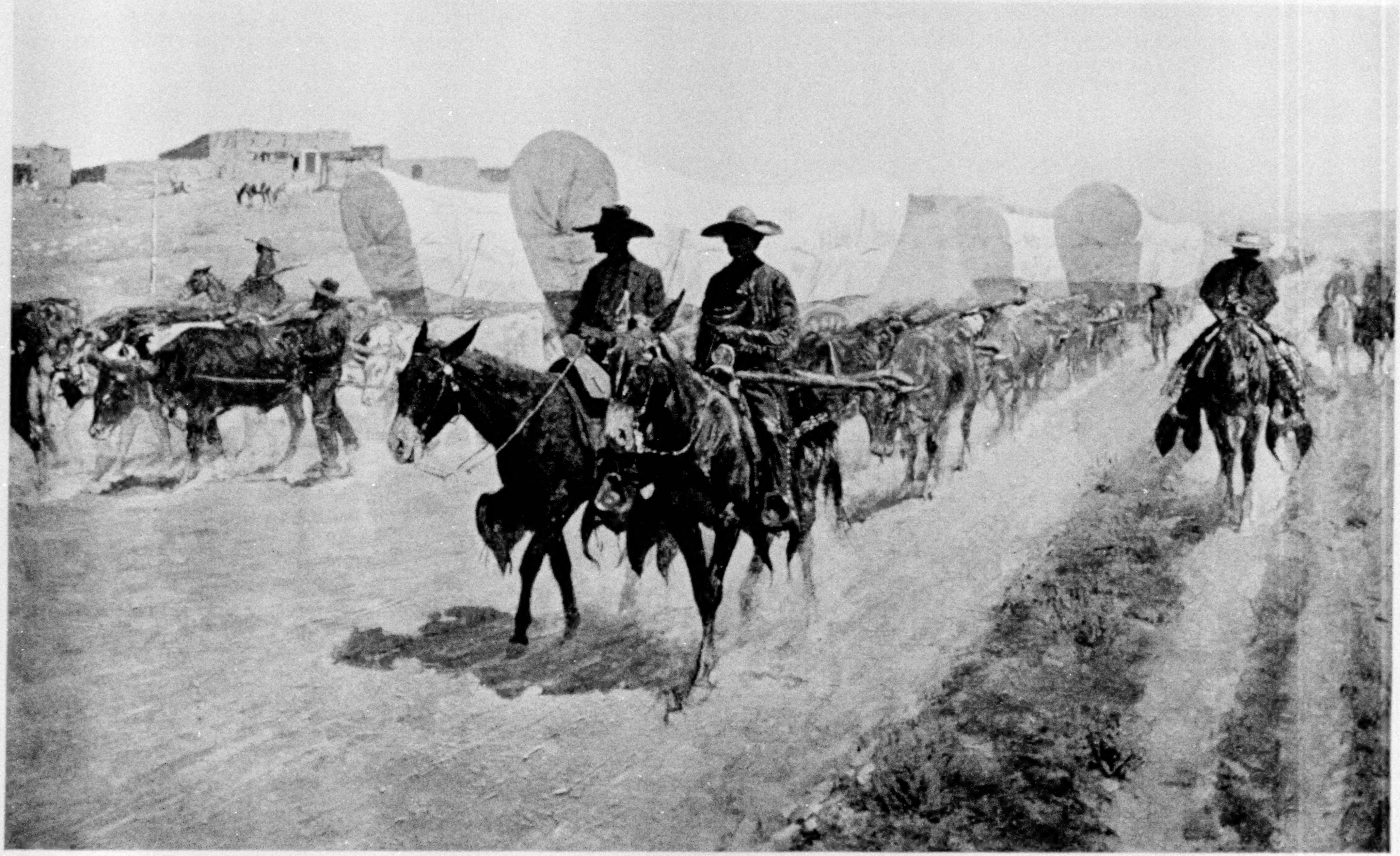
"K. C.," CHILD OF THE TRAILS

A few miles upstream from Independence Landing, where the Kansas, long called the Kaw, twists north into the Missouri, fur traders and freighters found a flat, shelving rock, an easy place to land goods. Near here, by 1833, a new town, Westport, came into being.

In time it became the starting point for Santa Fe. Gradually, as merchants and farmers followed the fur traders, this colony spread through a gap in the bluffs and came to be known as "Kansas," after the local tribe of Indians. Incorporated as the "Town of Kansas" in 1850, its name was changed to Kansas City in 1889.

"K. C." the natives called this crossroads of the continent, "whose God is Motion and whose ideal is Change." It is the child of the trails—a giant industrial child, rich now from barter with the Plains. For decades, facing what old geographies called the Great American Desert, it was the Nation's main gate to the Far West. Even yet it claims the lion's share of that now stupendous traffic which may still be styled the commerce of the Plains.

As railways pushed west, surveyors found that all grades slope down to the Missouri River bend where Kansas City stands. Railroad men say you can take a freight car 300 miles out west on any line



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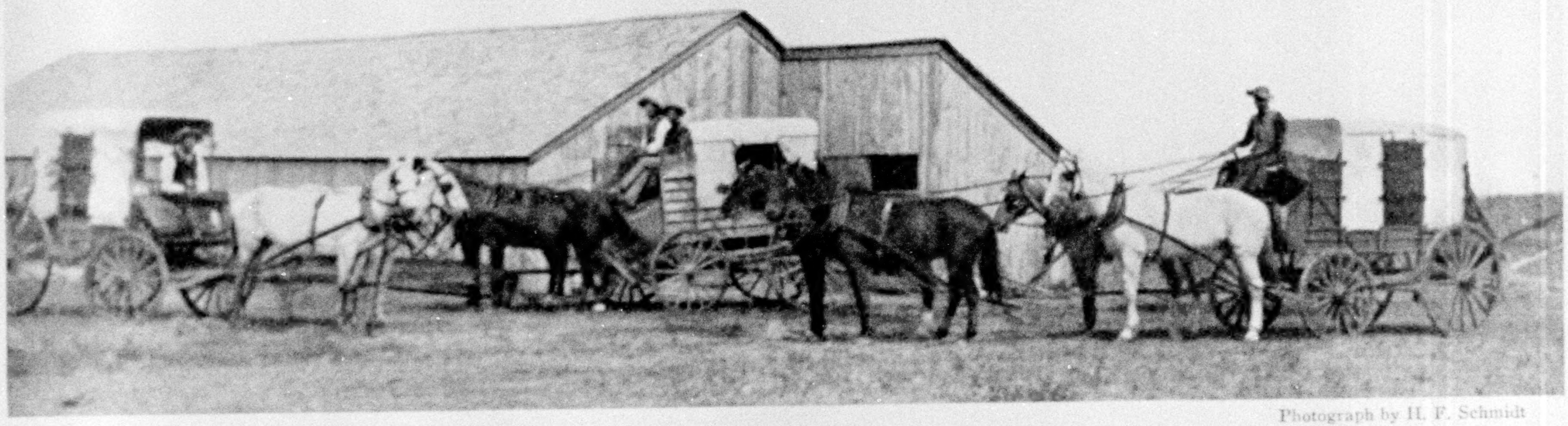
LIKE SLOW MOTION PICTURES, OX TEAMS CRAWLED IN CLOUDS OF DUST ACROSS THE PLAINS

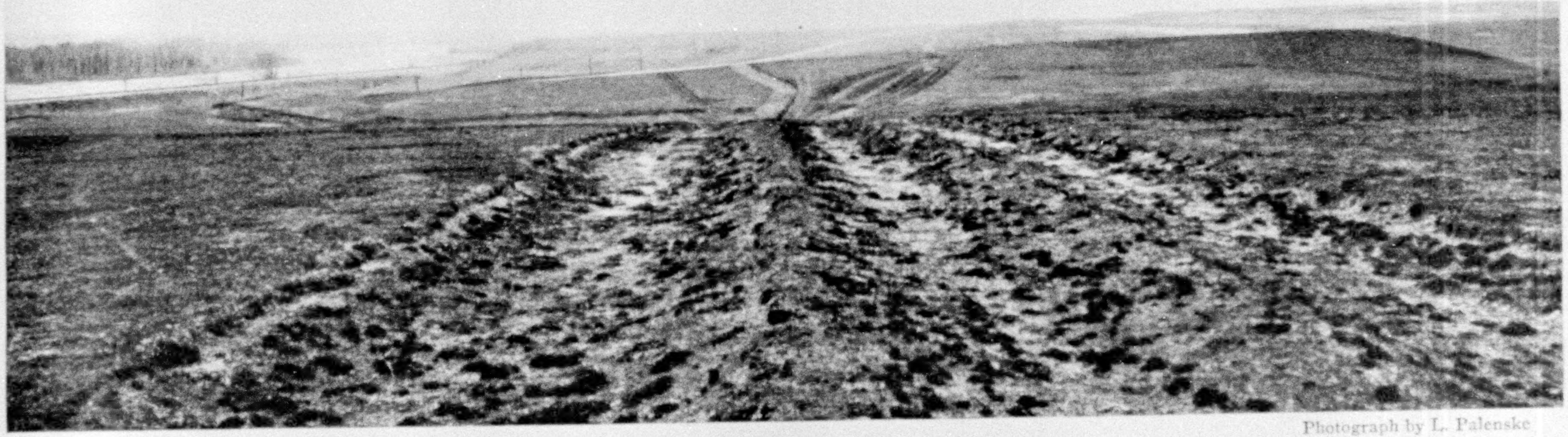
Two, four, and even eight abreast the wagons sometimes rolled, escorted by outriders for protection against Indians. "The Caravan on Its Way" is Frederic Remington's title for this remarkable study of the old West.



Photograph by H. F. Schmidt

DAWN IN DODGE CITY, LONG AGO, WITH STAGECOACHES READY TO START WITH MAILS AND PASSENGERS

Many stage lines issued arms to passengers for use against Indians and renegade whites who thrived as highway robbers along the Old Trail. On "Boot Hill," at Dodge City, 38 of these "bad men" were buried. Excavations there for a building, years later, revealed one early fighting man buried with guns and spurs on and an Indian arrow in his skull.



Photograph by L. Palenske

OVER SILENT, EMPTY PLAINS PLODDING EMIGRANTS POUNDED THIS PATH TO EMPIRE

The actual Santa Fe Trail, as it looks now, in the hills west of Dodge City, Kansas. Buffalo grass was burnt off before this picture was taken, leaving in plain sight the ruts worn by wagons and stagecoaches. In the left background is the Arkansas River, paralleled by a railway, and, winding toward the horizon, runs the white ribbon of the new Santa Fe Trail paved highway.

from Kansas City, let it loose, and it will coast back again. Now twelve trunk lines and twoscore branches serve it. Its trade is above a billion dollars a year and it slaughters about 7,500,000 animals. It has no iron ore at hand; yet, from old farm and factory machines gathered on the Plains, its steel furnaces consume more than 650,000 tons of scrap iron annually!

WHERE THE CURRENTS OF NATIONAL LIFE EBB AND FLOW

Here all the currents of our national life ebb and flow. Into a vast union station (see page 219) pours an endless stream of tourists, bound for Santa Fe, Los Angeles, San Francisco, Seattle, the Orient, or Mexico. Day and night a vaulted marble lobby larger than Ctesiphon's ancient Hall, swarms with salesmen, groups of emigrants, booted cowboys, dimple-kneed schoolgirls, and invalids in wheel chairs off in quest of longer life in Tucson or Texas.

Now and then a long-haired Indian, garbed in cheap, ill-fitting clothes, may appear. But don't misjudge him; he may be an Oklahoma oil millionaire going east to buy the latest model of high-priced limousine!

Here is yet the path of empire. Millions have used it since ox-team times, and still the stream swells. An avenue it was, in early days, that tied America to Mexico, the sole means of social, business, and political contact between the two countries. History knows other great trade routes, of course—there were the famous "silk streets," or caravan trails from China to the Rhine; and from Peru down to Argentina the walking Incas carried their wares—but the Santa Fe Trail, in one short century, has become one of the most traveled routes in the world.

Southwest into Kansas the Old Trail runs; thence west along the north bank of the Arkansas River, which formed part of the boundary between the United States and Mexico until the war of 1846-48. A few miles west of where Dodge City stands the Trail originally crossed the river, at Cimarron Crossing, following the Cimarron Valley over southwest Kansas and on to Las Vegas, New Mexico. But this road crossed many miles of waterless land, and later pioneers blazed a longer but more watered path (see map, page 216). This latter branch became in time the main thoroughfare, especially for wagons. It follows the Arkansas River into Colorado, through La Junta and Trinidad; thence over Raton Pass, and to Las Vegas and Santa Fe. To-day the Santa Fe Railway and the popular Santa Fe motor highway use this same route or closely parallel it.

From Franklin, Missouri, to Santa Fe the old trail is now well marked by monuments set up by the Daughters of the American Revolution. From one marker to the next, not a stretch of this long, grave-dotted Trail but has its story of hardship, hunger, thirst, Indian attacks, stampedes, burned wagons, murdered men, and captured women. Traced through Kansas, the Trail touches towns now which did not exist when ox teams and stages used it.

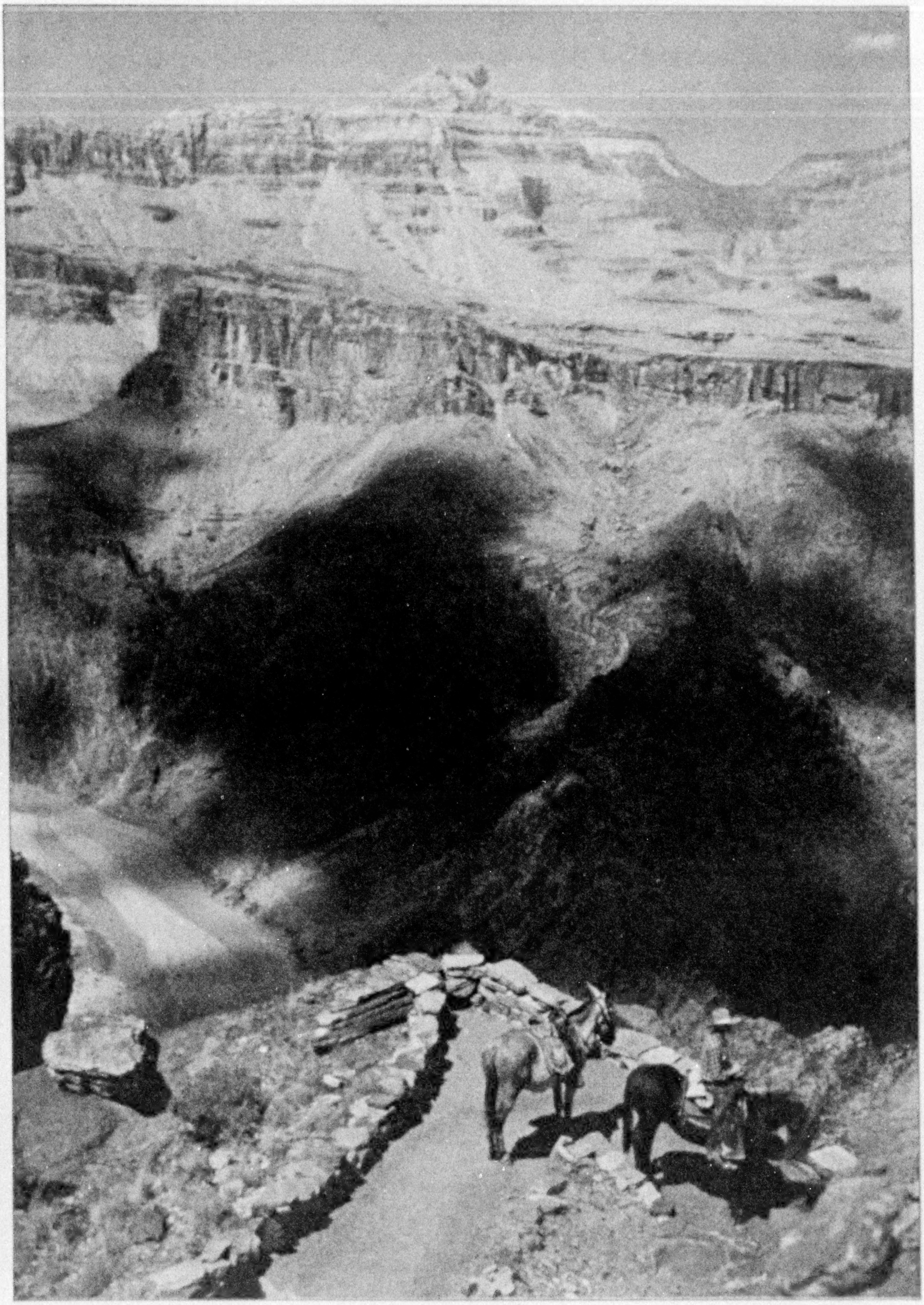
It touches other spots, too, like Black Jack, Pawnee Rock, Fort Dodge, and Cimarron Crossing, all famous in its history. It was at Black Jack that John Brown of Kansas, executed later at Charles Town, led his Free-Staters against the Missourians; and it was back from Lawrence that Quantrell and his Missouri guerrillas retreated after their historic raid on the town.

WHERE THE INDIANS CEDED TRAIL RIGHTS TO THE WHITES

At Council Grove stands a trail marker of unusual significance. Here, in 1825, agents of the American Government met the Osage chiefs and made a treaty with them. Under it the Indians gave all Americans perpetual right to use the Old Trail across their lands. For this permit the Osages got $500 cash and $300 in goods!

Motoring now through busy towns or past well-kept, prosperous farms, on smooth-paved highways, watching for speed cops instead of Indians, it is hard to realize that only a few decades ago men as wise as Washington Irving prophesied that Kansas must remain as uninhabitable as the deserts of Arabia.

"These great steppes seem only fitted for the haunts of the mustang, buffalo, antelope, and their migratory lord, the Indian; they are too isolated to become the abodes of civilized man," wrote Gregg in his "Commerce of the Prairies." Yet nearly



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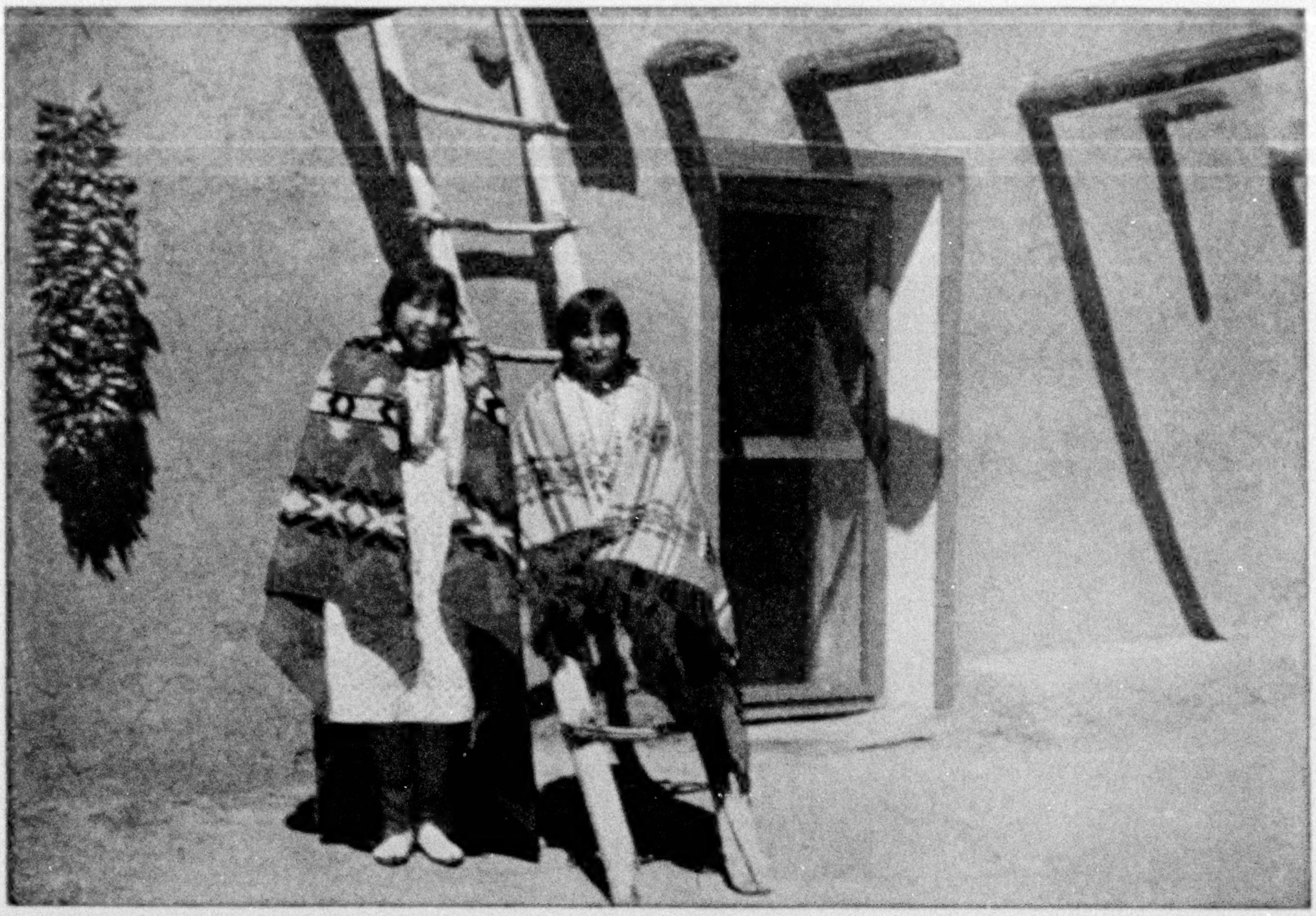
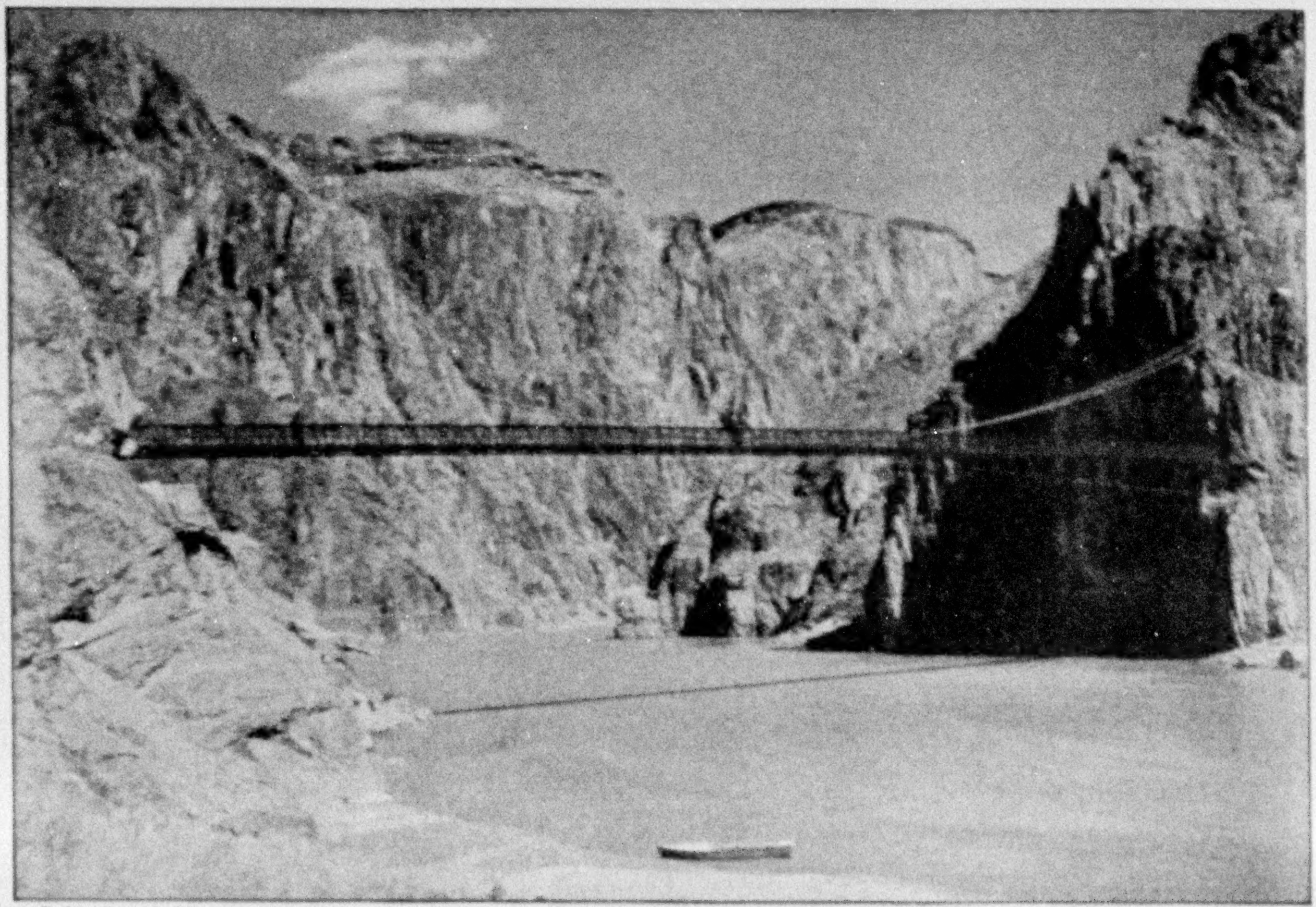
SUN GLOW AND CLOUD SHADOW SPLASH GRANITE GORGE WITH SPLENDOR

Seen from this turn of Tonto Trail, 1,200 feet above the Colorado, the master mural of the Grand Canyon changes ceaselessly, as if—now here, now there—expunged and repainted with a brush of winds by some impatient celestial artist.



BRIGHT HUES DELIGHT THE INDIAN MAIDEN'S HEART

Though these girls of Santa Clara Pueblo, New Mexico, have abandoned the beaded deerskin for colored prints, and their adobe home boasts a screen door, they still cling to the bizarre blankets and white boot-moccasins of their tribe.



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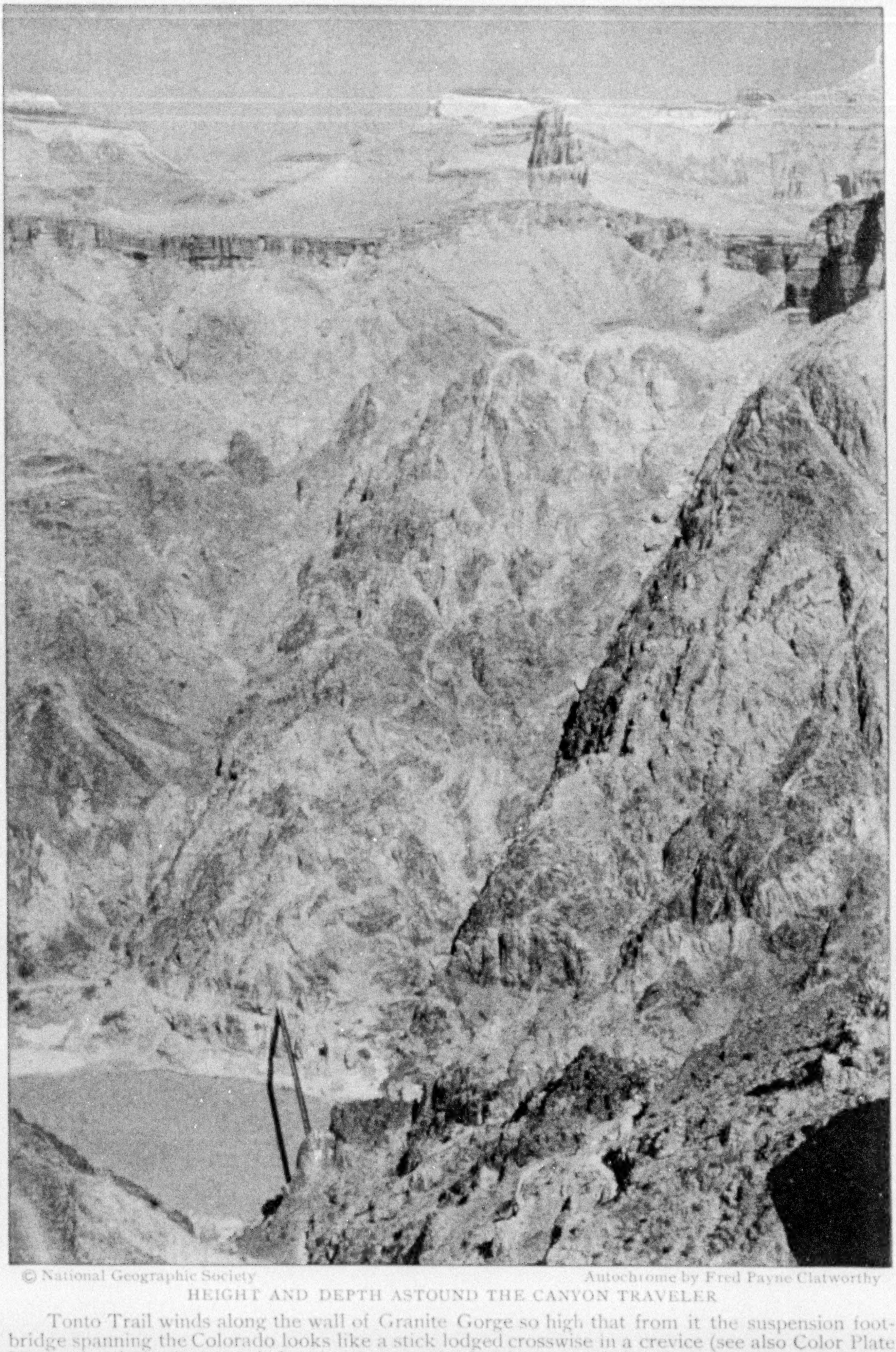
ACROSS THE CHASM CUT THROUGH COUNTLESS ÆONS MAN HAS FLUNG A PATH

The new suspension footbridge of steel at Granite Gorge is about 400 feet long and 90 feet above the ordinary level of the river. But at times of high water the mighty Colorado leaps halfway up to the span as if in angry protest against the impudence of the builders.



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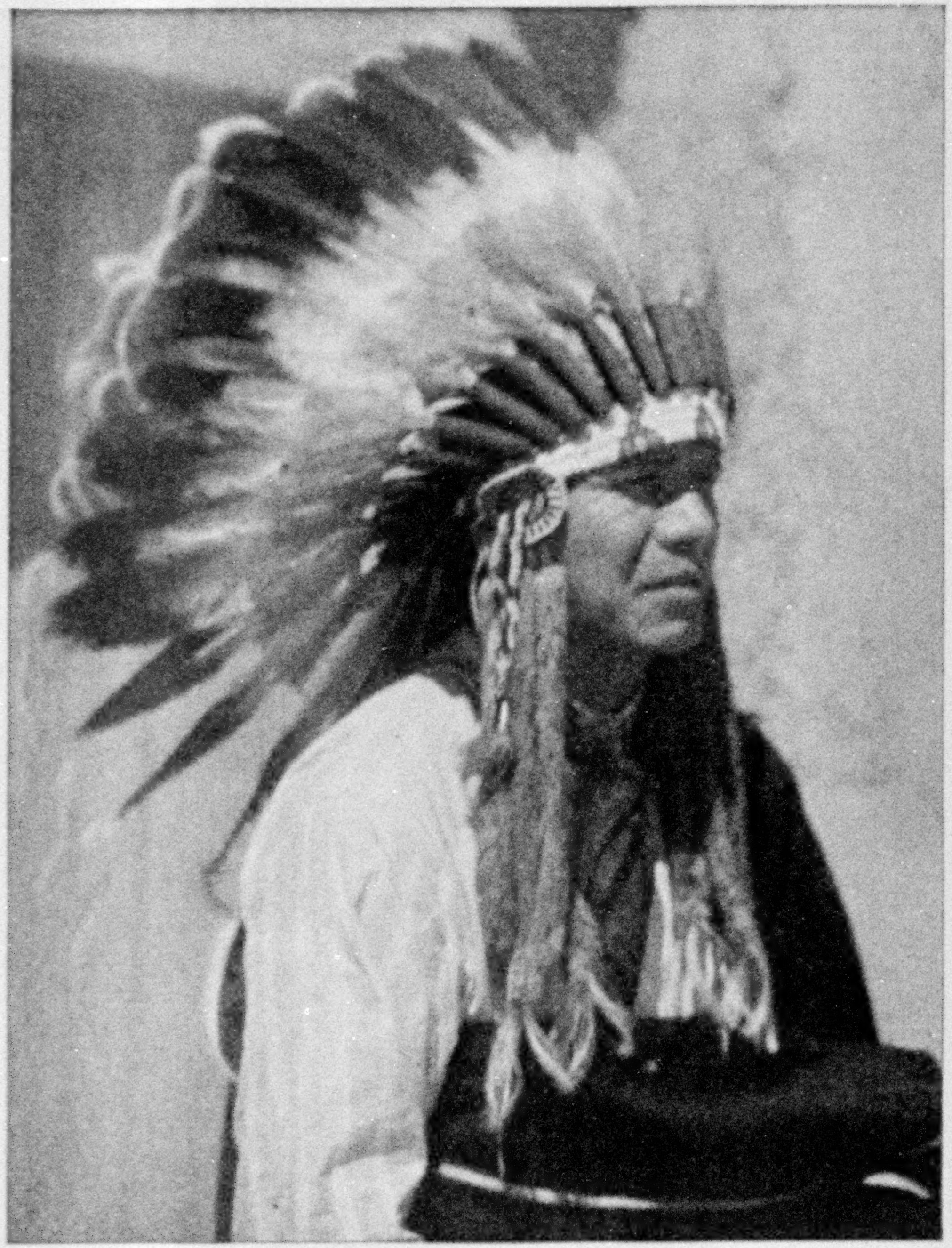
HEIGHT AND DEPTH ASTOUND THE CANYON TRAVELER

Tonto Trail winds along the wall of Granite Gorge so high that from it the suspension footbridge spanning the Colorado looks like a stick lodged crosswise in a crevice (see also Color Plate II); yet bastions of empurpled rock tower equally far above the road.



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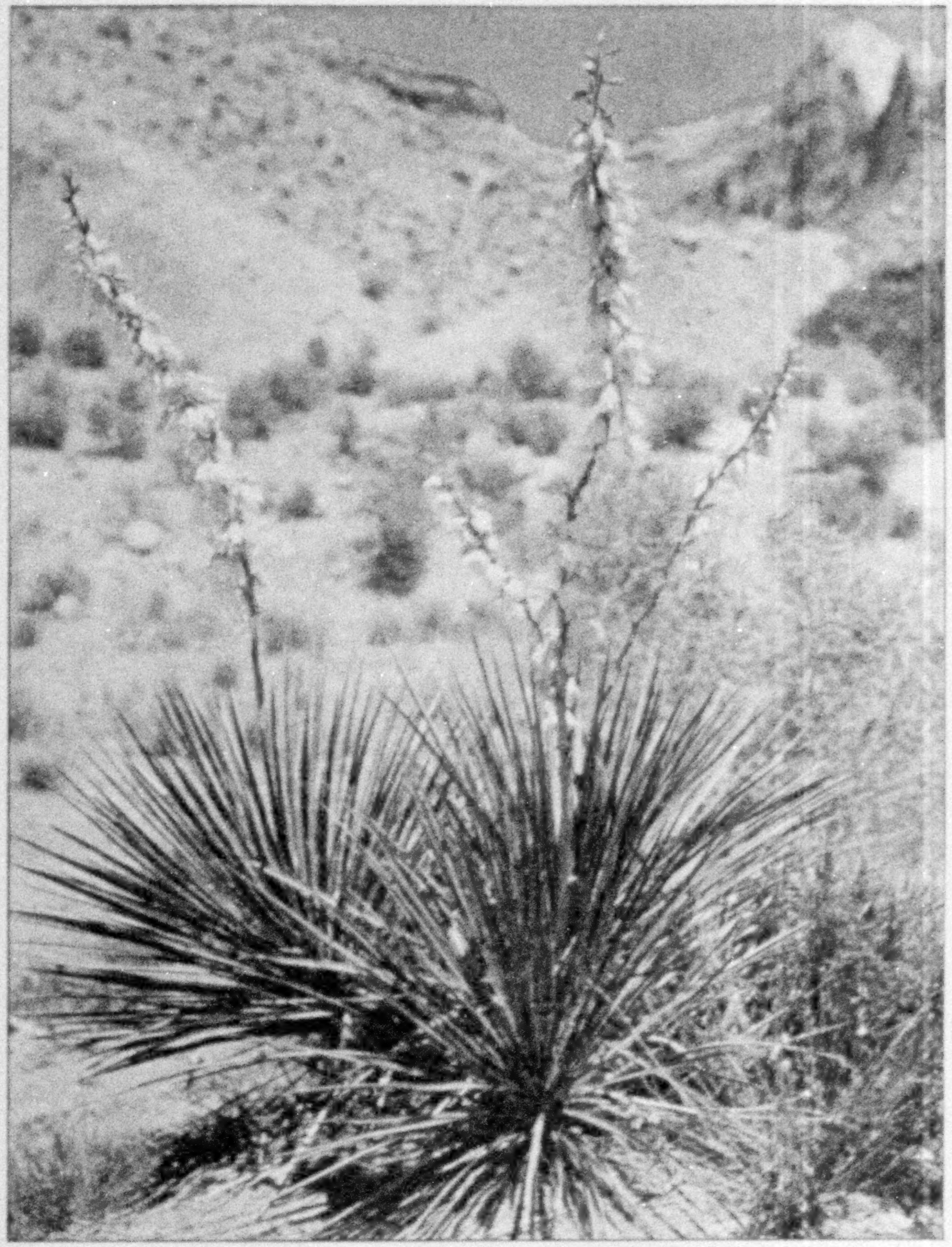
EAGLE FEATHERS ADORN THE HEADDRESS OF THE BRAVE

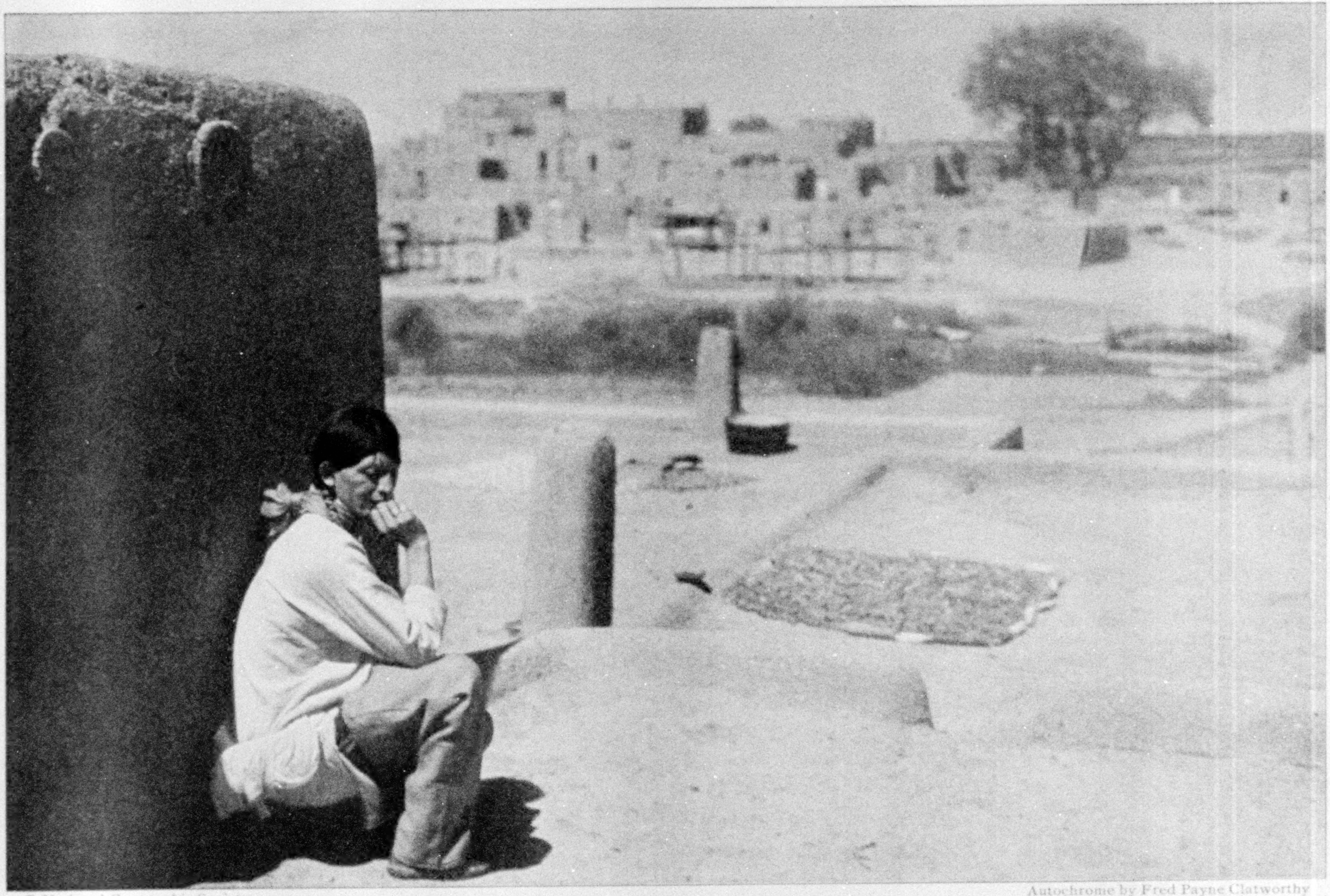
Santa Clara Indians wear striking costumes in their tribal dances. Each detail in the crown of plumes has its traditional meaning.



Autochromes by Fred Payne Clatworthy

SPANISH BAYONET IS A TRUE FLOWER OF THE DESERT

From a bristle of dagger leaves, harsh as the arid wastes that nourish it, the Yucca thrusts up tall stalks of delicate blossoms.



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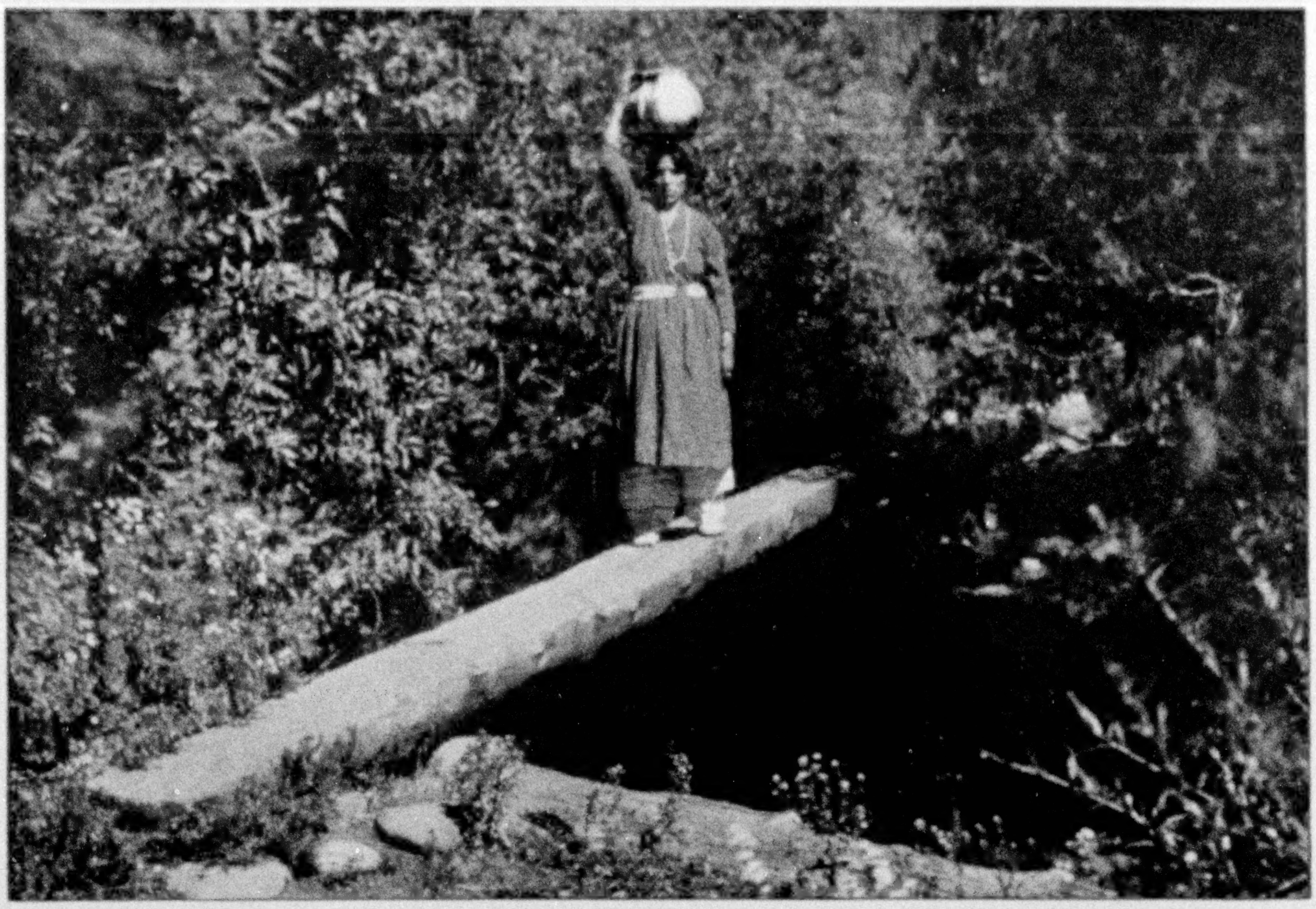
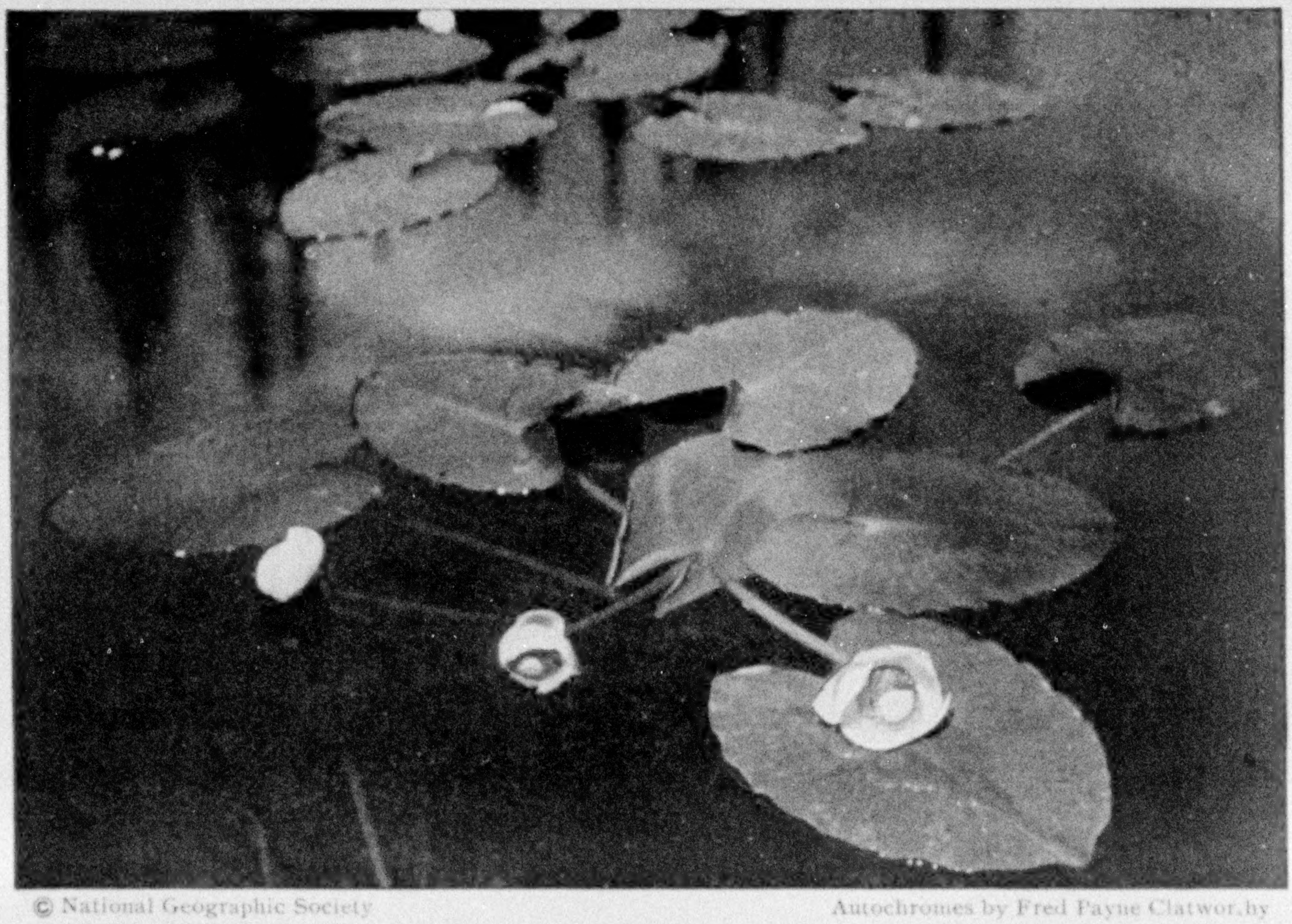
IN SPARKLING SUNSHINE CHANGELESS TAOS DREAMS EVER OF YESTERYEAR

The gayly bedight Indian sits pensive, musing perhaps on the departed glory of his tribe, lords of the Southwest in Coronado's day. Near him red peppers and plums, spread out to dry, make brilliant rugs. In the distance looms the many-terraced North Building of this peculiar people.



A WHITE-BOOTED WOMAN CARRIES WATER TO TAOS



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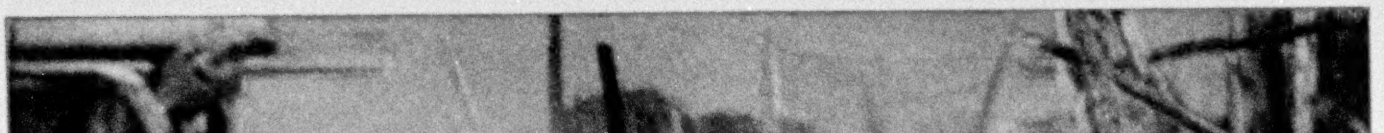
WATERLILIES FLOAT ON A MAGIC MIRROR OF UNBELIEVABLE BLUE

Glacial lakes, like strips of the summer sky, starred with flowers and holding adream in their crystal depths the images of mighty conifers, abound in Rocky Mountain National Park.

FEBRUARY IS ALMOND-BLOSSOM TIME AT BANNING, CALIFORNIA



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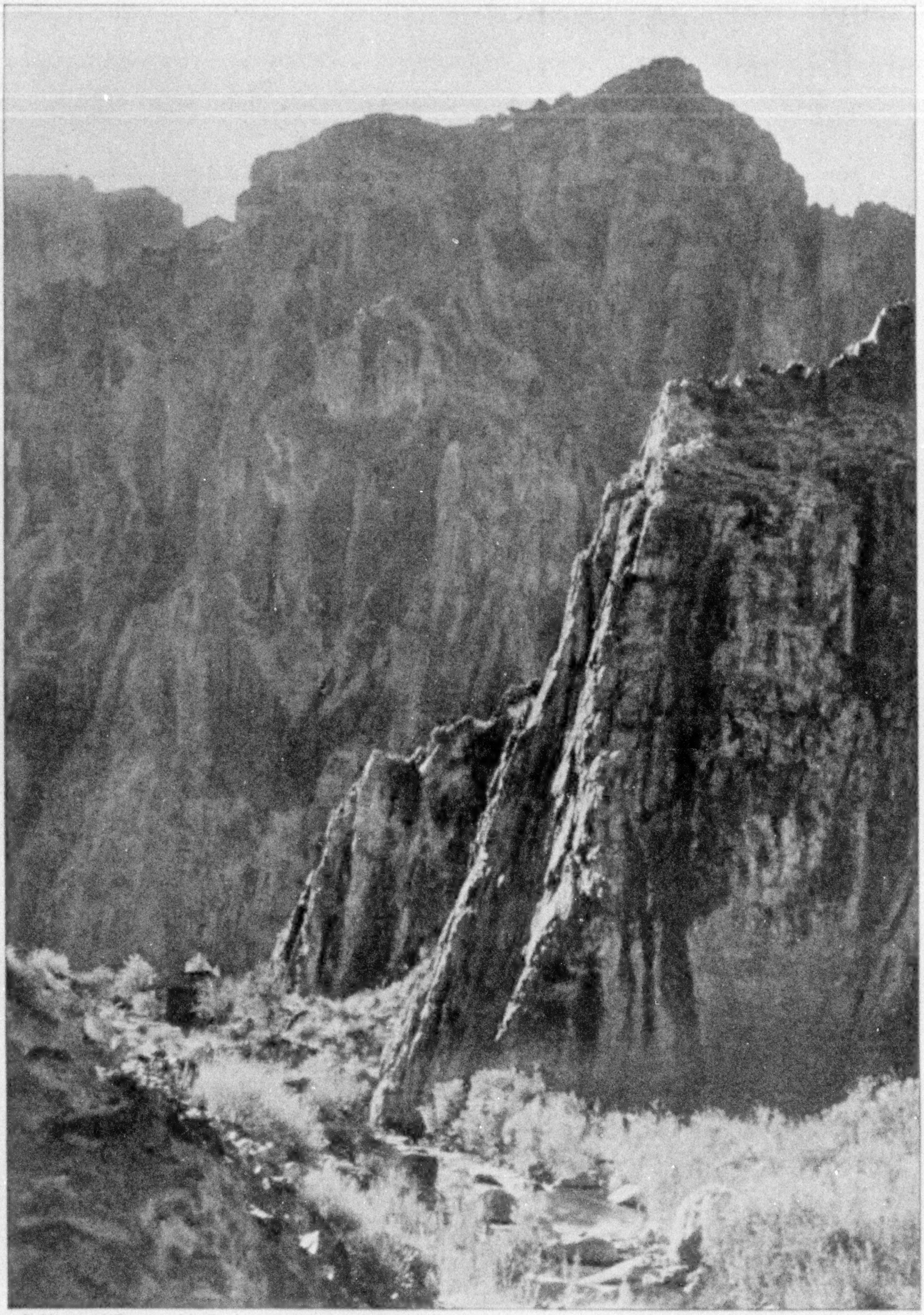
BAKING DAY IN SANTA CLARA PUEBLO

When the thick shell of the adobe oven is hot, the Indian woman will rake out the embers and set her loaves to brown in this primitive fireless cooker.



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Autochrome by Fred Payne Clatworthy

PURPLE GRANDEUR LOOMS ABOVE BRIGHT ANGEL TRAIL

Where the crystal waters of this creek join the turbulent Colorado, Maj. John Wesley Powell rested on his first voyage through the Grand Canyon and, delighted with the quiet beauty of the place, gave it its poetic name.

2,000,000 people live here now, with a per capita wealth of more than $3,500.

Much of Kansas affords a rare example of man's economic conquest of a once almost worthless region. Any discussion of its early social disorders, its sanguinary political fights, its devastating drouths and grasshopper plagues, would be out of place in a story about the Santa Fe Trail. But one cannot follow this Trail across the State and talk with pioneer farmers and merchants who remember, for example, when 50,000 dissatisfied people quit Kansas in 1889 for Oklahoma, and who remember when armies of broken and bankrupt home-seekers turned sorrowfully back east, without gaining a vivid picture of the struggle Kansas made for salvation.

Science, power machines on farms, the magic of quick communications, irrigation, coöperative market methods, and blind pioneer persistence—these are factors in the rise of Kansas. Spots in its west are to-day, of course, nearly as empty as when Coronado came in 1541 and found "mighty plains and sandy heaths, smooth and wearisome, full of crook-back oxen, and a shower of hail as big as oranges, which caused many tears and vows."

But in Kansas to plant a tree is an act of grace. Since I first saw it, as a boy, the aspect of its landscape has been much changed by trees. Sunburnt boom towns now have tree-lined, shaded streets. Nor is the whole State a flat plain, as often assumed. Riding the Old Trail out the "Kaw," one sees bluffs and hills of some height. In fact, this part of Kansas, with its belted uplands and broken, dipping rocky strata, as in the Flint Hills, has often been compared to northern France. Many patches of native woods, with groups of imposing old cottonwoods, adorn this region; and, from Oklahoma, Kansas pioneers long ago brought the Osage-orange, an ornamental hedge familiar now in many parts of the Middle West.

ON HISTORIC PAWNEE ROCK PASSING PIONEERS CARVED THEIR NAMES

Pawnee Rock, famous landmark, near the present town of that name, is a cliff on the north rim of the Arkansas Valley. The Old Trail runs in its dark, bloody shadow. It was long feared as the most dangerous spot on the whole march to Santa Fe. Indians resting upon it could see for miles over the Ash, Walnut, and Arkansas valleys and make ready to ambush the coming wagon trains. It was here that young Kit Carson, standing guard at night, mistook his own mule for an Indian and shot it! On the hill's rocky face thousands of freighters, soldiers, trappers, gold-seekers, and emigrants carved their names beside the petroglyphs of savages (see illustration, page 234).

Climb upon what is left of it now, since pioneers quarried here for building stone, and you can understand why rival Indian tribes fought for it. Miles away sweeps the great bend of the Arkansas; and there lies the rich valley of the Walnut, for ages a vast, watered region of green grass, feeding ground for countless buffalo. Seeking meat, various warring Indian tribes often met here, and this region was the scene of more tribal conflicts than any other spot in America. Particularly it was the arena of death struggles between the powerful Pawnees and their hereditary enemies, the Cheyennes.

WHEN THERE WAS "NO GOD WEST OF DODGE CITY"

Fort Dodge, near Dodge City, used now as a soldiers' home, played an extraordinary rôle in the conquest of the Plains. From here, on one of his daring dashes, Custer took the field in deep snow to punish Indians. In a surprise attack he charged their camp, his mounted band playing "Garry Owen," stirring tune dear to every old trooper of the Seventh Cavalry.

"There is no God west of Dodge City." That was a saying in the turbulent days of the town's youth. Gamblers, gold-seekers, buffalo-hunters, and cowboys, bringing millions of cattle "up trail" from Texas to be loaded on the railroad's end in Kansas, frequented its dens and dance halls then.

"But all that's changed now," a citizen told me the night I arrived. "Nothing now, but just peace and plenty." But even as he spoke the sharp bang-bang of gunfire came from the alley back of the hotel. One more deputy sheriff gone—with the ghosts of Boot Hill! But this was merely inopportune—not at all usual in the Dodge City of to-day.

Dodge City now is the metropolis of southwest Kansas, an important distrib-

Photograph by Ewing Galloway

EVEN INDIANS ENJOY A GOOD STORY!

These cheerful, robust sisters are fine types of Kiowas. They were photographed while visiting the Haskell Institute, the Indian school at Lawrence, Kansas.

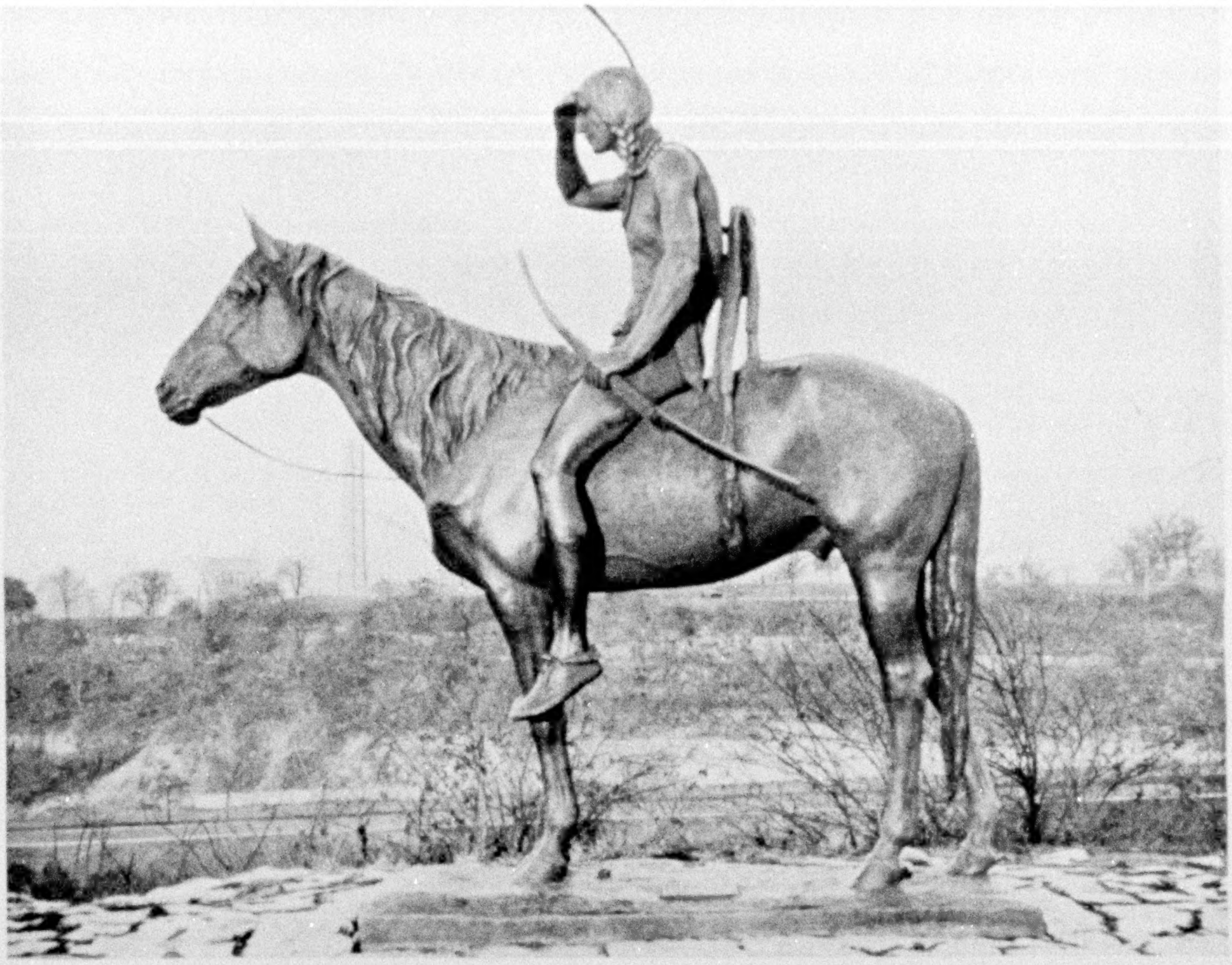
uting center for farm machinery and merchandise. The rail center of fourteen counties, growing about 30,000,000 bushels of wheat annually, it is also the seat of a great milling industry. Where pioneers saw only buffalo grass, Kansas now grows corn, wheat, oats, barley, milo maize, alfalfa, and other crops. Through its north-central counties flows the Arkansas River, in whose rich valley sugar beets and other irrigated crops are grown. In this region the yearly crops are estimated to be worth $75,000,000.

RUSSIAN MENNONITES BROUGHT WHEAT SEED TO KANSAS

From a few bushels of "Turkey" seed wheat, brought here years ago by Russian Mennonite settlers, Kansas developed a prodigious industry. Wheat production has grown by more than 200 per cent in less than ten years. Often a single farmer cultivates as much as 1,000 acres. More than 5,000 "combined" harvesting machines are used in this district. The great factor in this growth of farm life has been the power machine, the truck, tractor, combine, and other implements which cut labor costs and make large-scale farming easy.

One sod shanty formed all of Dodge City only 60 years ago. Millions of buffalo roamed these plains then, with deer, antelope, and other game. But when the railroad came, in the early 1870's, a rousing, colorful frontier town soon grew up, furnishing supplies for hunters, ranchers, military posts, and Indian agents. It was then, with Texas cattle arriving in endless herds, that Dodge City became and remained for years the greatest shipping point for range cattle in America.

So many buffalo roamed the Plains then that at times railway trains would have to stop and wait for vast herds to cross the track. Passengers, firing from the train, wantonly killed them for the mere excitement of it. Market hunters, too, slew these animals by the countless thousands merely for their robes. Old photographs show great stacks of buffalo hides piled at the track awaiting shipment (see illustration, page 235).



Photograph by Ewing Galloway

THE INDIAN SCOUT, AS DEPICTED BY CYRUS DALLIN

This impressive figure stands in Penn Valley Park, Kansas City, Missouri.

There is a popular yarn to the effect that in the early days of Fort Riley the commanding officer issued an order reading:

> "1. Members of this command will, when shooting at buffalo on the parade ground, be careful not to fire in the direction of the C. O.'s quarters.
>
> . . . .
>
> "3. Officers will discontinue the practice of roping and riding buffalo."

In the hard, lean years that came when the buffalo was practically exterminated and before local farming succeeded, many a western Kansas community existed by gathering up buffalo bones. Trainloads of them were shipped east to make fertilizer and buttons.

THE LAST OF THE COUNTY-SEAT WARS

Shady, peaceful Cimarron, with its neat homes and happy, frolicking children, suggests naught of those exciting years when blaspheming bullwhackers drove their creaking wagons through its streets or forded the river here for the shorter southern path to Santa Fe. But its older residents well remember that noisy day in 1889 when armed men from near-by Ingalls raided it, "shot it out" with Cimarron citizens, and seized and carried away the county-seat archives. It took the State militia to restore order after this last of the really bloody county-seat wars of western Kansas. At the time the *New York Tribune* said:

> "The news that another county-seat war has broken out in Kansas has found its way to New York by telegraph. Once more a four-mule team is attached to one of the courthouses and it is going across the prairie on a fast trot.
>
> "The existence of the western Kansas courthouse is at best transitory and uncertain. . . . One day the stray swine of Occidental City seek its hospitable shade, the next some predatory calf in Big Stranger bunts open the back door and eats a deed and two mortgages while the registrar is taking a nap. To-day we mark it in Grand Junction with a new front door

UNLUCKY
PETE

Photograph by L. Palenske

DEATH LURKED IN THE DARK SHADOWS OF PAWNEE ROCK

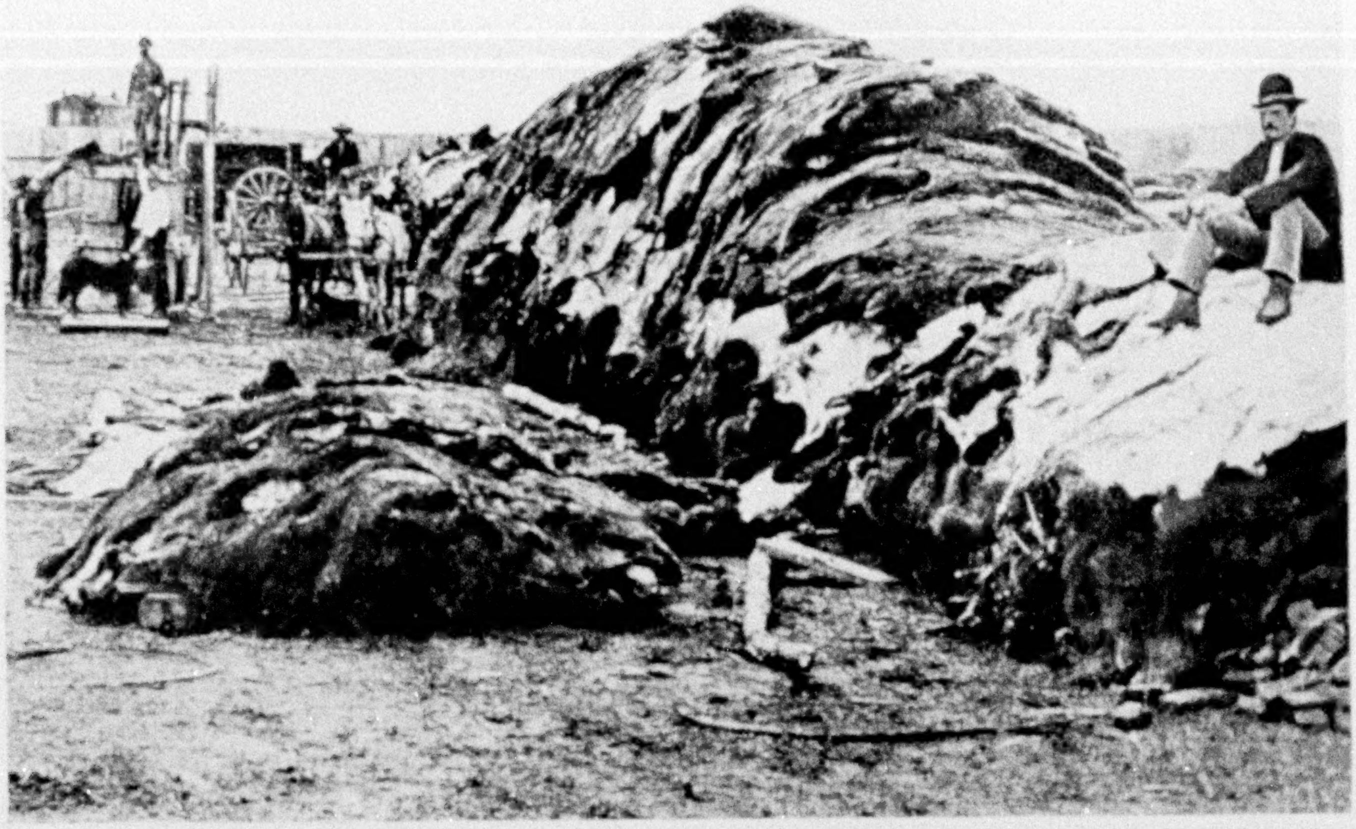
In this vicinity Indians time and again attacked wagon trains traversing the Arkansas River Valley. On the face of the frowning rock thousands of emigrants, freighters, trappers, and soldiers carved their names, some of which are still legible (see text, page 231).

GOEST I WILL GO WHERE THOU LODGEST I WILL

Photograph from Roy Godsey

THE PIONEER MOTHER

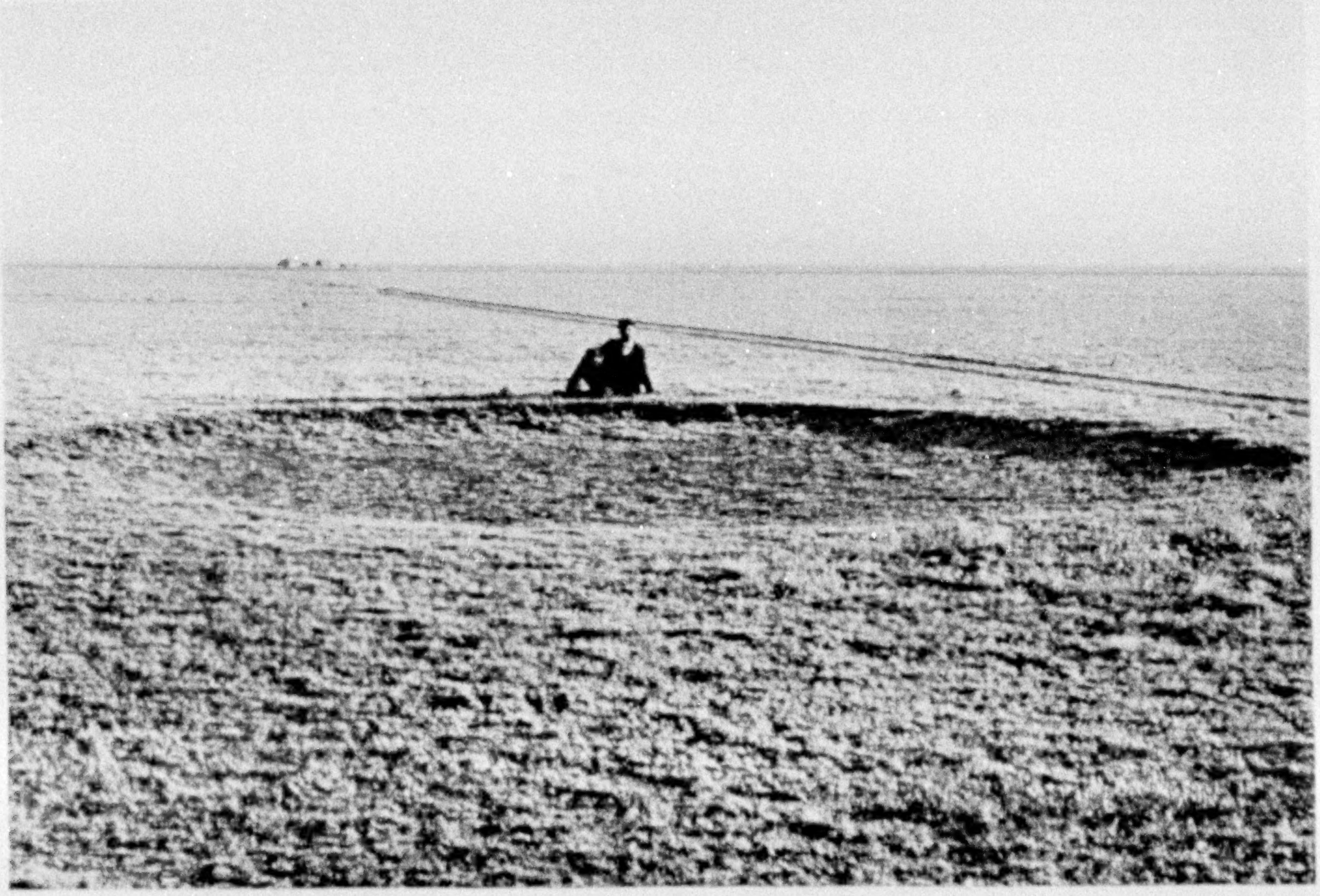
Stout of heart, thrifty, emigrant women braved the perils of the West to help make America. In Penn Valley Park, at Kansas City, this monument to them overlooks the Santa Fe Trail.



Photograph by H. F. Schmidt

A PILE OF 40,000 BUFFALO HIDES IN EARLY DAYS AT DODGE CITY

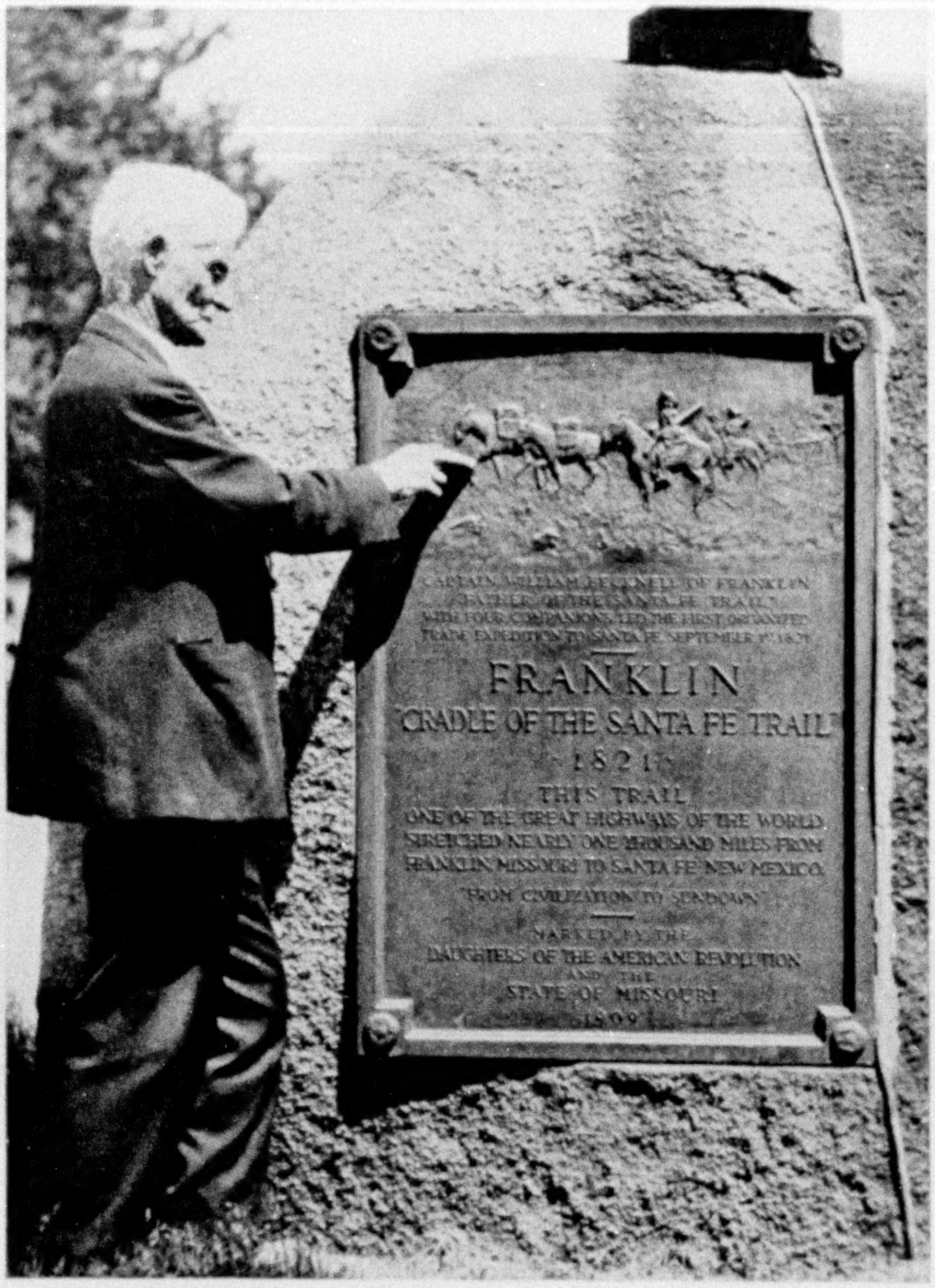
"Buffalo City" this town was first called because it was the center of that grim business of shooting and skinning buffalo. Later, in lean years, buffalo bones became a medium of exchange (see, also, text, pages 232-233).



Photograph courtesy U. S. Geological Survey

A BUFFALO WALLOW IN KANSAS, PHOTOGRAPHED SOME YEARS AGO

Before farms spread over the grass country these depressions, wherein buffalo wallowed to scratch or free themselves of flies, were common on the western Plains.


CAPTAIN WILLIAM BECKNELL OF FRANKLIN
"FATHER OF THE SANTA FE TRAIL"
WITH FOUR COMPANIONS LED THE FIRST ORGANIZED
TRADE EXPEDITION TO SANTA FE SEPTEMBER 1ST 1821
FRANKLIN
"CRADLE OF THE SANTA FE TRAIL"
1821
THIS TRAIL
ONE OF THE GREAT HIGHWAYS OF THE WORLD
STRETCHED NEARLY ONE THOUSAND MILES FROM
FRANKLIN MISSOURI TO SANTA FE NEW MEXICO
"FROM CIVILIZATION TO SUNDOWN"
MARKED BY THE
DAUGHTERS OF THE AMERICAN REVOLUTION
AND THE
STATE OF MISSOURI
1909

Photograph from Rehmeier Studio

THE FIRST MARKER ON THE SANTA FE TRAIL

Monuments erected by the Daughters of the American Revolution and the States now identify the course of the Trail for the traveler (see, also, page 212). This first marker stands at New Franklin, Missouri, built on the hills just north of the original Franklin.

painted yellow, and the gable end blown off by the last tornado, but to-night a band of determined men will come from Rattle Snake Crossing and haul it away with a yoke of oxen, with the mayor and city council of Rattle Snake pushing on the end of the courthouse."

BUSSES NOW FLASH BY AT 50 MILES AN HOUR

In startling reminder of the sweep of progress, I sat in the shade of trees at Cimarron Crossing and watched big busses whizzing by. Sprawled in cushioned seats, amid comforts undreamed of in ox-team days, dozing passengers went whirling by at 50 miles an hour. From New York to California many such big 120-horsepower busses now run. To-day bus lines connect all the cities of the West, some of them with berths like those on trains, with running water, smoking compartments, and even the friendly radio to cheer travelers over the main streets of America. One after another I watched them whiz along where the bullwhackers used to plod.

"When we crossed the river here," said one man who still remembers, "there was a spot so deep that the usual string of oxen couldn't get a foothold; so we hitched 32 yoke of cattle to each wagon. We got the train across, but it took all day." Now, in one day, a modern bus runs half the length of the whole Old Trail—the trail it took ox teams weeks to negotiate!

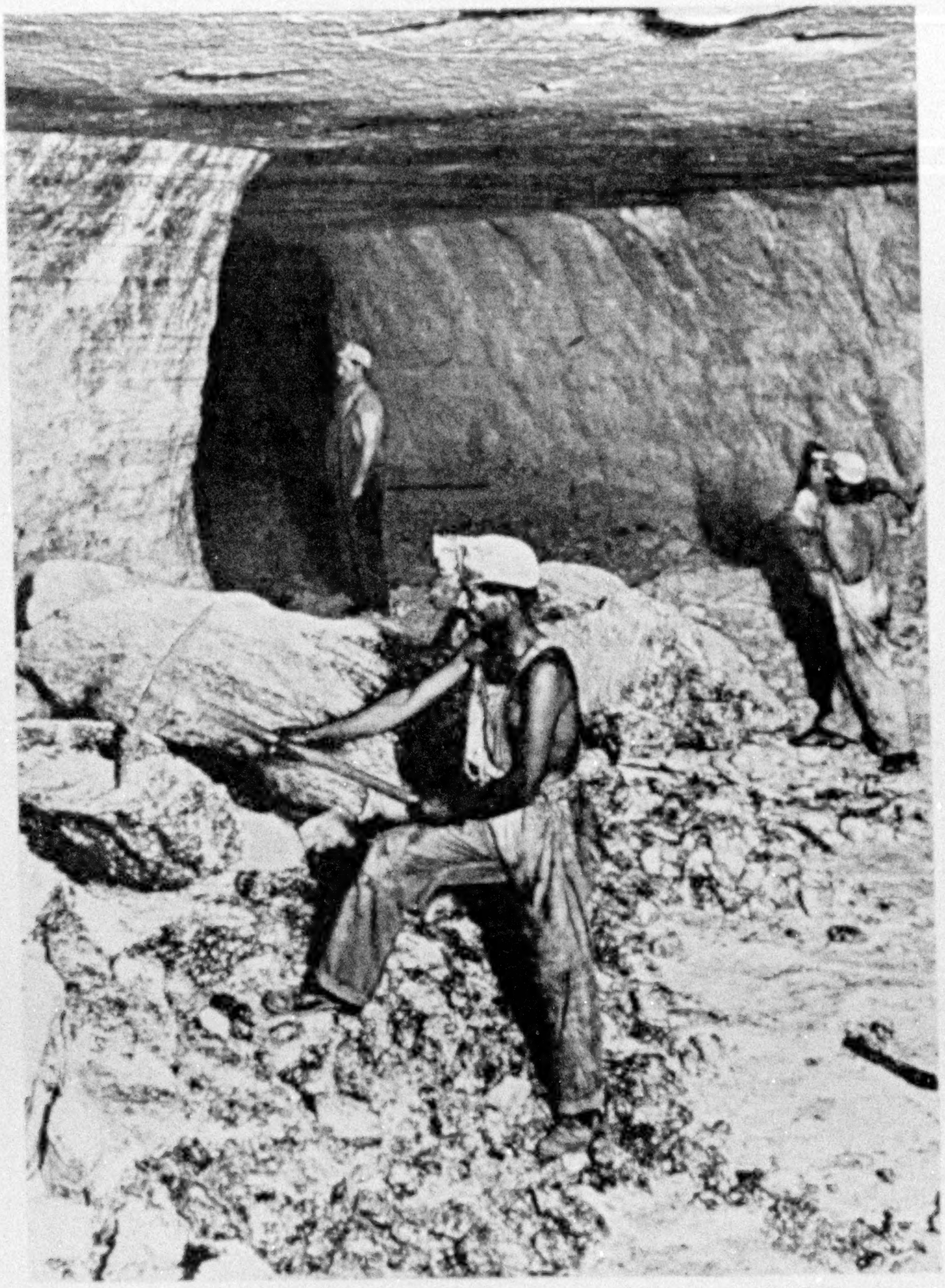
To-day, on the new Old Trail, fuel, at gas stations, is everywhere, at convenient intervals. But one pioneer writes: "At Ash Creek, west of Pawnee Rock, was the last place to get wood before New Mexico. Often we hung logs under the wagons, and always we had a bag hung on the side of the wagon box, into which everybody tossed chips or stray bits of wood for starting cook fires."

THROUGH THE "VALLEY OF CONTENT"

From Cimarron west the Old Trail parallels the north bank of the Arkansas, through "The Valley of Content," as local inhabitants style this amazingly productive region. Garden City, famous for its sugar-beet industry, and the town of Coolidge, near the Colorado line, were undreamed of in ox-team times. Here much of the Old Trail has been plowed up.

Hereabout also, beyond the irrigated areas, one sees stretching away to head-quivering horizons the treeless landscape of the short-grass country. It is a land, in dry years, of gaunt cattle and the loco weed. Cattle, sheep, and horses learn to like this powerful herb. Once addicted to loco weed, a cow is like a man given to drugs—the animal seems to go crazy. It loses its sense of proportion; it will imagine that a small stick in its path is a big log, and will rear up to jump over it.

"I knew a cowboy once who chewed some," a practical joker told me, "and it made a $2 bill look to him like a $20."



© Ewing Galloway

A HUTCHINSON, KANSAS, SALT MINE

Pioneers crossing Kansas often got salt by evaporating water at salt springs.

Beyond the Colorado line, past the ruins of Bent's famous old fort, the monotony of the Plains begins to yield. Far down on the southern horizon outposts of the Rocky Mountains lift their heads.

WHERE PIKE FIRST SAW HIS PEAK

By infallible signs, now you know the ancient Spanish land is not far away. At wayside stations you catch a whiff of corn-husk *cigarrillo;* a burro sleeps near by. Men carry water in sacks, square canvas bags with a cork in one corner, to tie on motor cars in crossing dry country. Strings of red peppers begin to appear at tank towns where Mexicans work on track repairs, and at dusk you hear tinkling guitars and swarthy singers humming "La Paloma."

And here is Las Animas, first important town on the Trail with a Spanish name. Near here Pike first saw the big mountains, and the peak that bears his name. On November 23, 1806, he wrote: "About 2 o'clock in the afternoon I thought I could distinguish a mountain, which appeared like a small blue cloud. Half an hour later it rose in full view before us."

Look to the northwest now and you, too, may see the stupendous mountain mass. About it, every afternoon in summer,

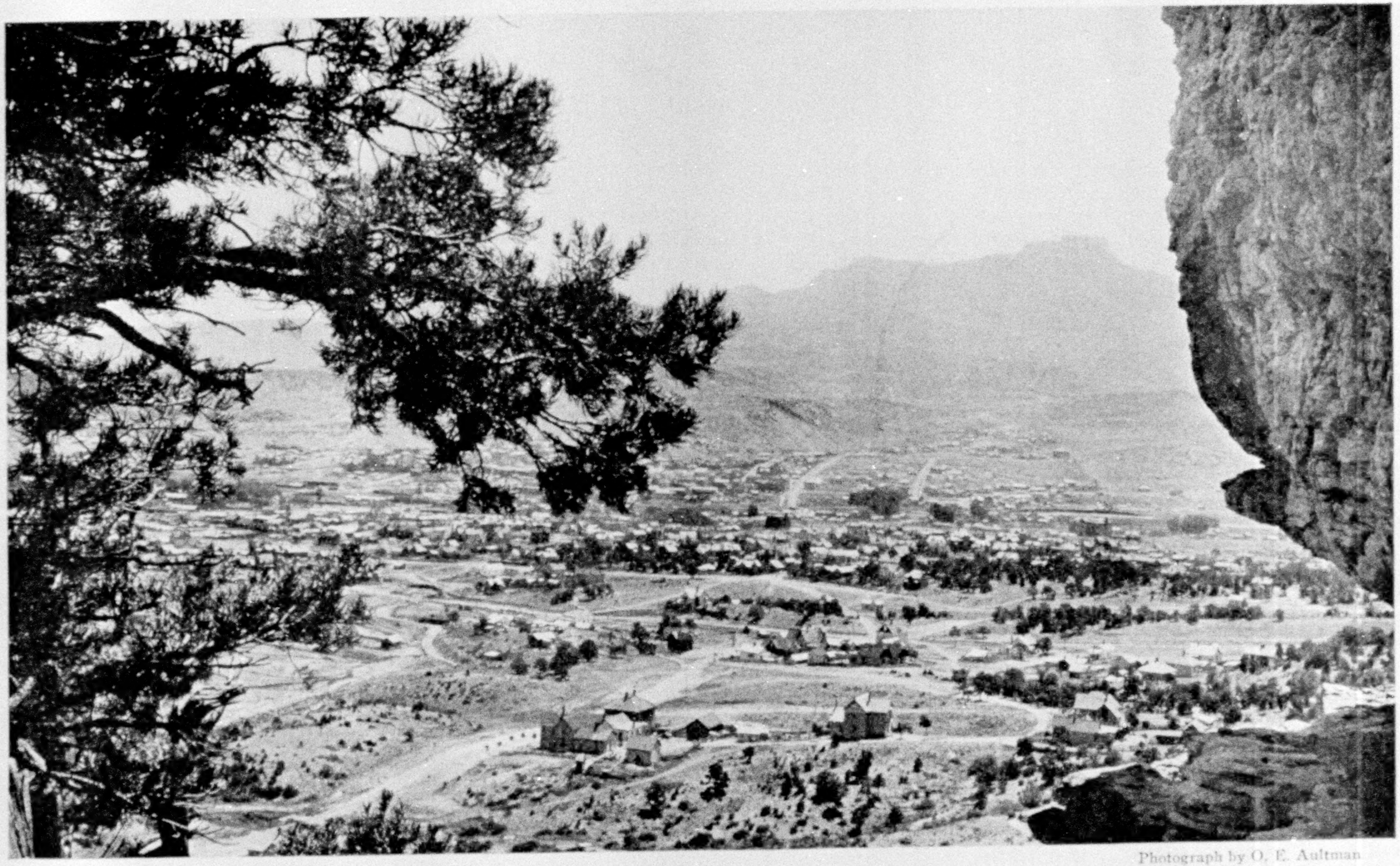
Photograph by George L. Beam

THE MAJESTIC SANGRE DE CRISTO MOUNTAINS REFLECTED IN DE WEESE RESERVOIR NEAR WESTCLIFFE, COLORADO

These giant, snow-capped mountains, only a section of which is shown here, run through the San Isabel National Forest near the Santa Fe trail.

© T. Harmon Parkhurst

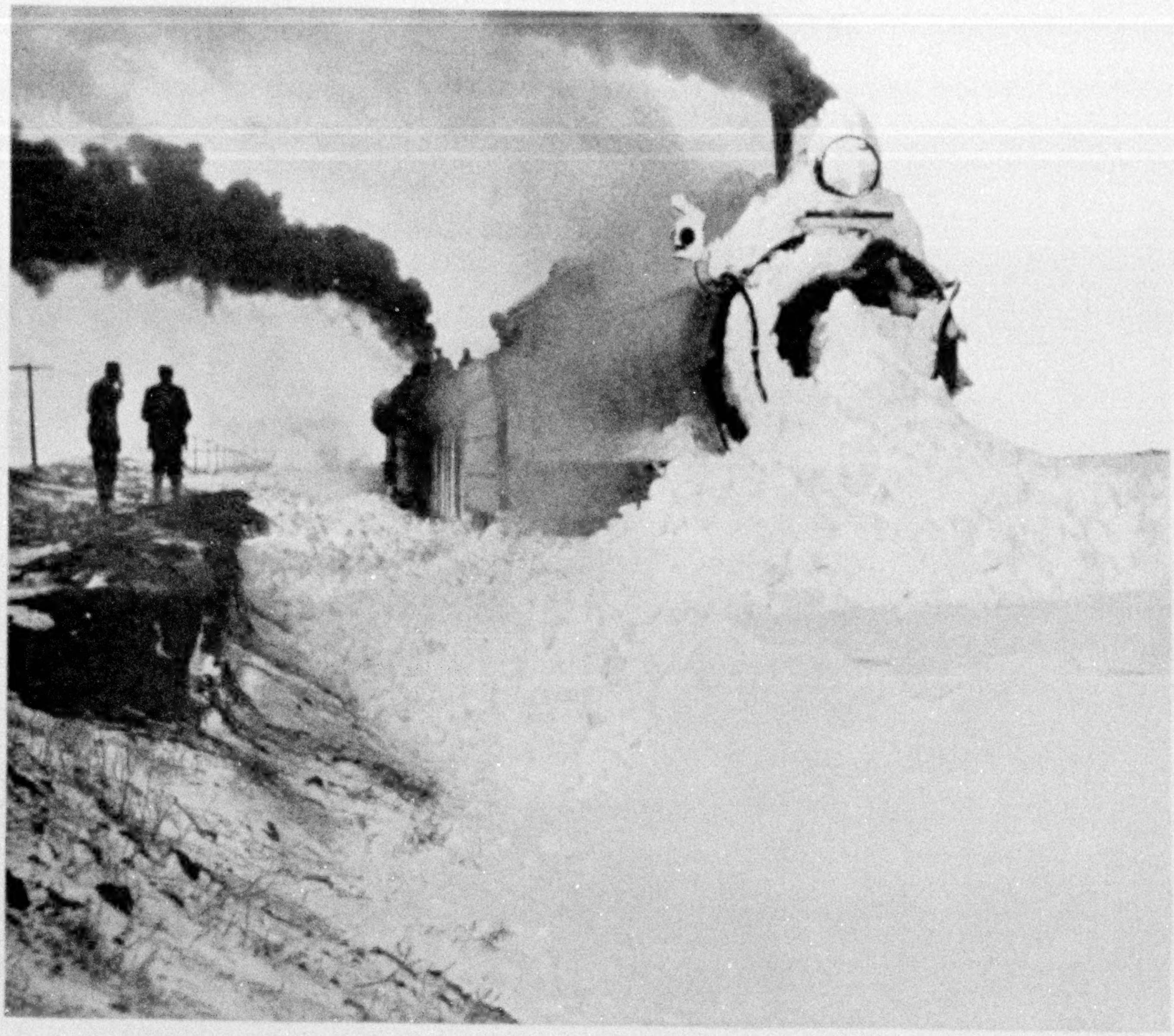
DIM TIRE RUTS, HALF HIDDEN IN GRASS, MARK THIS ROMANTIC PATH TO EMPIRE



Photograph by O. E. Aultman

TRINIDAD, COLORADO, GREW FROM INNS, BLACKSMITH SHOPS, AND STABLES BUILT BESIDE THE SANTA FE TRAIL

Framed by peaks, watered by the tumbling Purgatoire, and bathed in the bright top light of Rocky Mountain sunshine, few cities anywhere enjoy so extraordinary a setting. An early view of Trinidad from Simpsons Rest, with Fishers Peak in the background.



Photograph by O. E. Aultman

A SANTA FE TRAIN PLOWS THROUGH SNOWDRIFTS ALONG A HIGH STRETCH OF THE OLD TRAIL IN COLORADO

To avoid snow and insure grass for animals, emigrants crossed the Plains in warm weather.

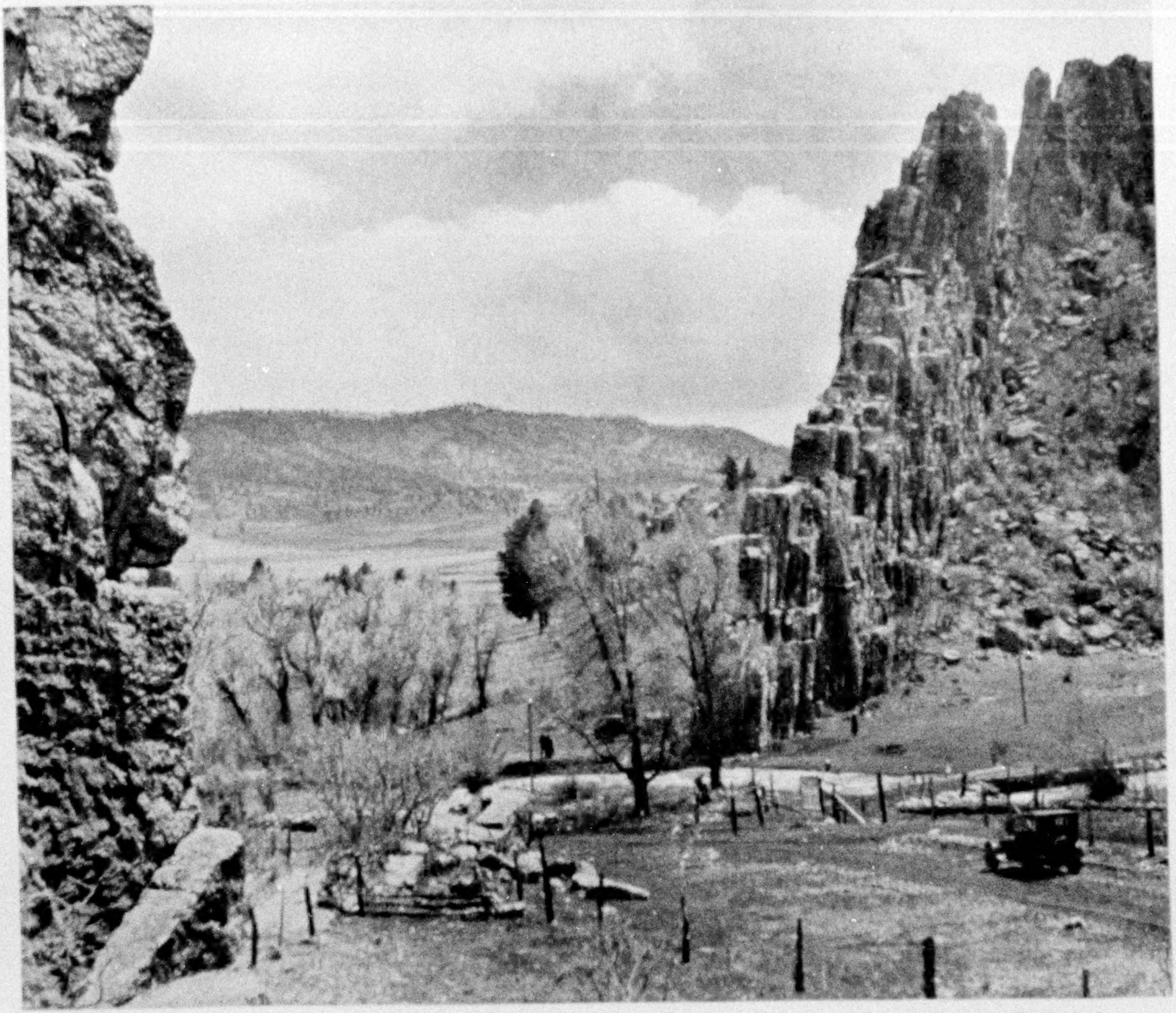
thunderclouds form and showers fall on Colorado Springs, at its base.

HISTORY ENVELOPS LAS ANIMAS

Las Animas bristles with history. It makes much of its place on the Old Trail. At Old Trail fiestas it has exhibited in parade the same old stagecoach that Horace Greeley rode in when he came west, and it hooks up yokes of oxen to show its children how their forbears traveled west. It points out proudly the path trod by Doniphan and his Missouri legion, when they marched this Trail and down the valley of the Rio Grande to help Scott win the Mexican War. A tragic but wonderful achievement that, compared by William Cullen Bryant to Xenophon's Expedition, embalmed for all time in classic Greek.

Veering southwest now, through the modern railway junction town of La Junta, the Trail bears down to Trinidad, through grain and sugar beets. Heroic, indeed, is the landscape here. Small wonder the beaver trappers, the traders, and gold hunters of the Middle West seldom returned to the monotony of level lands when they had known these mountains. Pikes Peak still in sight, though more than 100 miles away, and always, like giant sentinels, through the centuries, the two towering Spanish Peaks; and then, far ahead, the mighty Raton Range, at whose feet lies the city of Trinidad, not named by pious pioneers for the Trinity, but for a Mexican girl!

Mountains keep watch over Trinidad, city of miners, movies, memories, and beans; for here is one of the largest pinto



Photograph by O. E. Aultman

THE MIDDLE FORK OF PURGATOIRE RIVER AT STONEWALL GAP, COLORADO

In memory of certain comrades who perished on this river without benefit of clergy, early Spaniards named it "El Rio de las Ánimas Perdidas en Purgatorio." French-Canadian trappers shortened this to "Purgatoire." But Yankee pioneers either couldn't pronounce Purgatoire or mistook its meaning and called it "Picketwire River," which is its local name to-day.

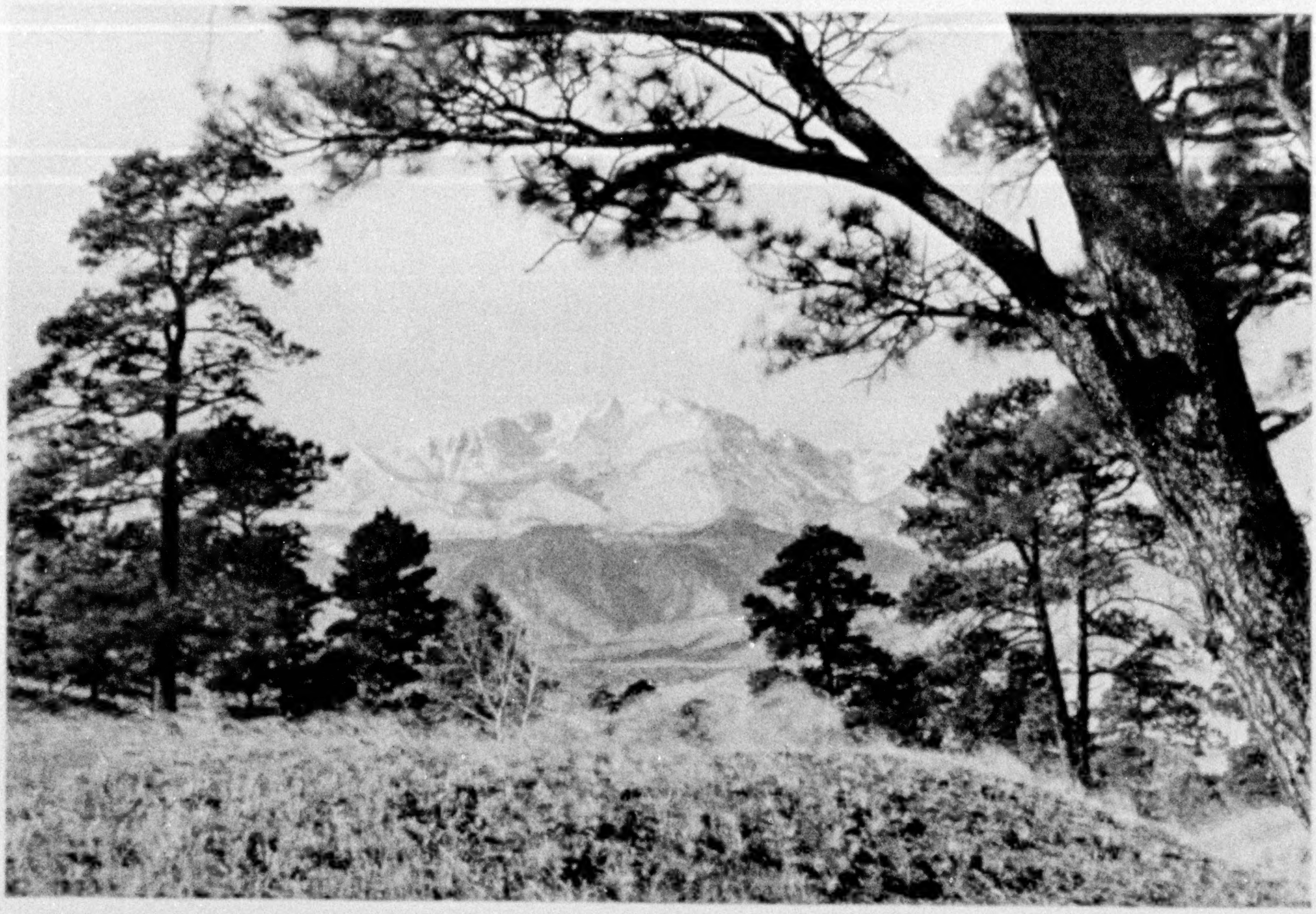
bean centers in North America. But coal is king. They mine it by the trainload.

Here Kit Carson's memory is green. In the center of the city a monument is erected to him (see page 215), in the shadow of Fishers Peak, high point in the Raton Range, named for one of Kearny's officers who climbed it when his army camped here on the Purgatoire.

WOOTTON COLLECTED HIS TOLLS WITH A GUN

South of Trinidad the modern motor highway passes the historic Wootton Tollhouse, built long ago beside the Old Trail. Richen Lacy Wootton, a Virginian, gained fame here as a trapper, Indian fighter, and trader. A friend of Kit Carson, old Bill Williams, St. Vrain, and other noted frontiersmen of that time, he finally settled at the north end of Raton Pass. Improving the then rough trail, he put up a tollgate and collected—often with a gun—from those who used the road. The story of his life, a book long out of print, is one of the most fascinating of all frontier biographies.

Going up Raton Pass, the railway runs now right where the ox wagons left their tracks, only to disappear into a yawning tunnel, emerging on the other side of the range, in New Mexico. To-day's motor highway, a scenic boulevard winding through rocks and mountains, is an engineering wonder. Climbing it now, you pass the north border of the historic Max-



Photograph by Photo Craft Shop

ZEBULON M. PIKE, SO FAR AS IS KNOWN, WAS THE FIRST WHITE AMERICAN TO SEE THIS PEAK WHICH BEARS HIS NAME

Pikes Peak is America's best-known mountain. For decades it was a landmark for trappers, emigrants, traders, and Indian fighters, and each season tourists swarm up to its apex, 14,110 feet above the sea, by cog-tram, trail, and automobile (see, also, text, page 237).

well Land Grant. This grant was one of many made by the Spanish Government, in what is now Colorado and New Mexico, to early settlers.

By treaty between the United States and Mexico these grants were recognized. This one covered 1,750,000 acres and ran for 50 miles along the Old Trail. Maxwell, conspicuous in the annals of the Southwest, lived in baronial elegance and was known for the luxury of his lavish entertainments. I saw the ruins of his old home where, pioneers say, he kept as much as $40,000 in gold merely to meet his current expenses.

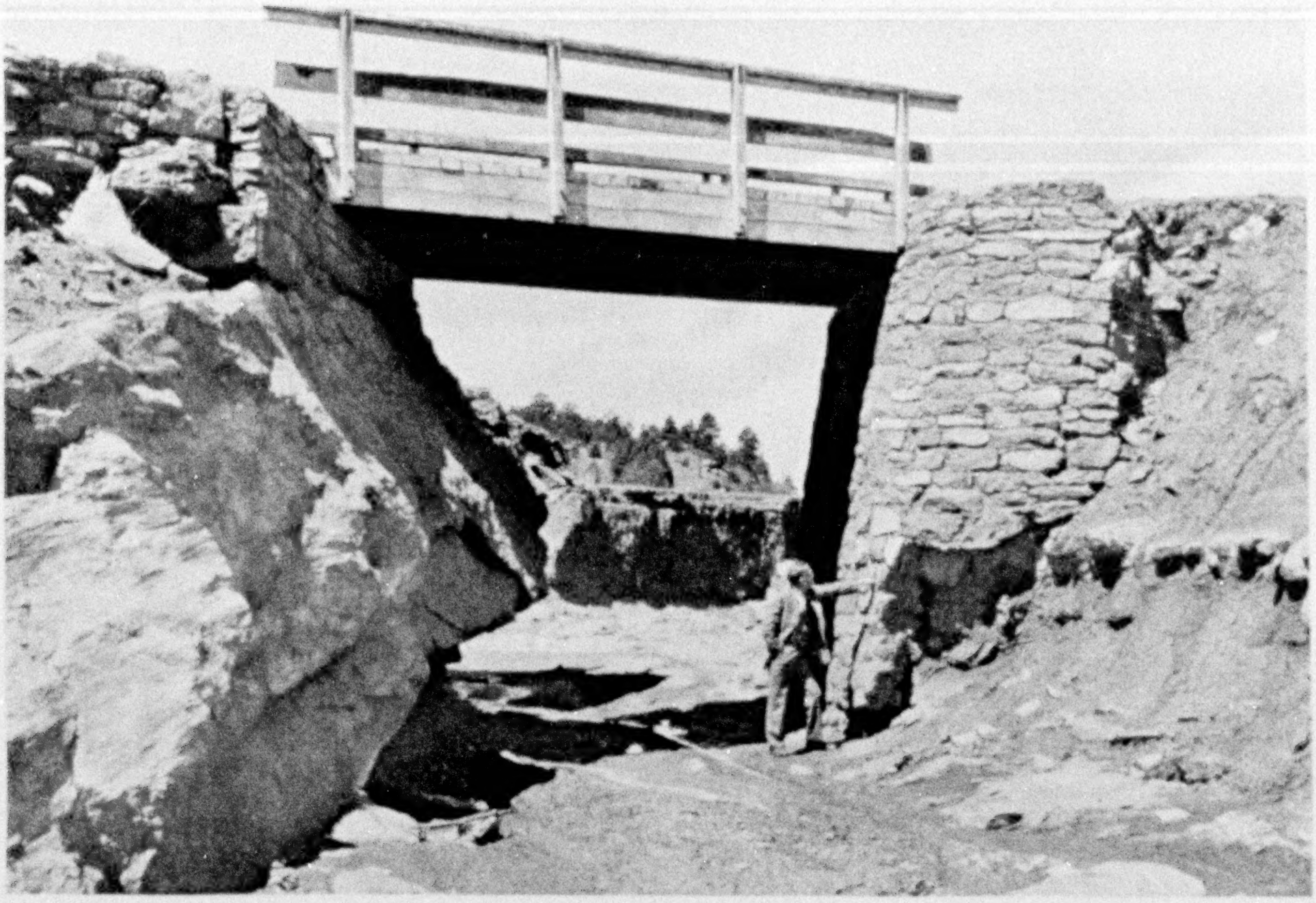
From the summit of the pass and Raton Mesa one looks down into the valley of the Canadian River; and down the well-built, winding road you enter the clean, friendly town of Raton, New Mexico. In Old Trail days it was called Willow Springs. When Kearny's army passed this way, in 1846, before Wootton's road was made, it had to draw its cannon and wagons up the steeper slopes with ropes. Raton digs coal and deals in cattle and sheep.

INDIANS LIVE ON FLAT MOUNTAIN TOPS

Hereabout you begin to see those odd-looking flat-topped mountains, or mesas, peculiar to this part of America. Erosion, through ages, has carved them out in bold, sharp forms. Rising now hundreds of feet above the Plains, they are visible as landmarks at great distances. In places, as at Acoma, Pueblo Indians have built their homes on these high, almost inaccessible, natural platforms for easy defense against such enemies as the Apaches. I asked Indians at Acoma why they stuck to their dry, dreary, windswept rock, with an easier life in the green valleys in sight below them. "Because we want to," they said.

In this dry, clear air you can see very far. At night more bright stars appear than ever eastern dwellers dream of.

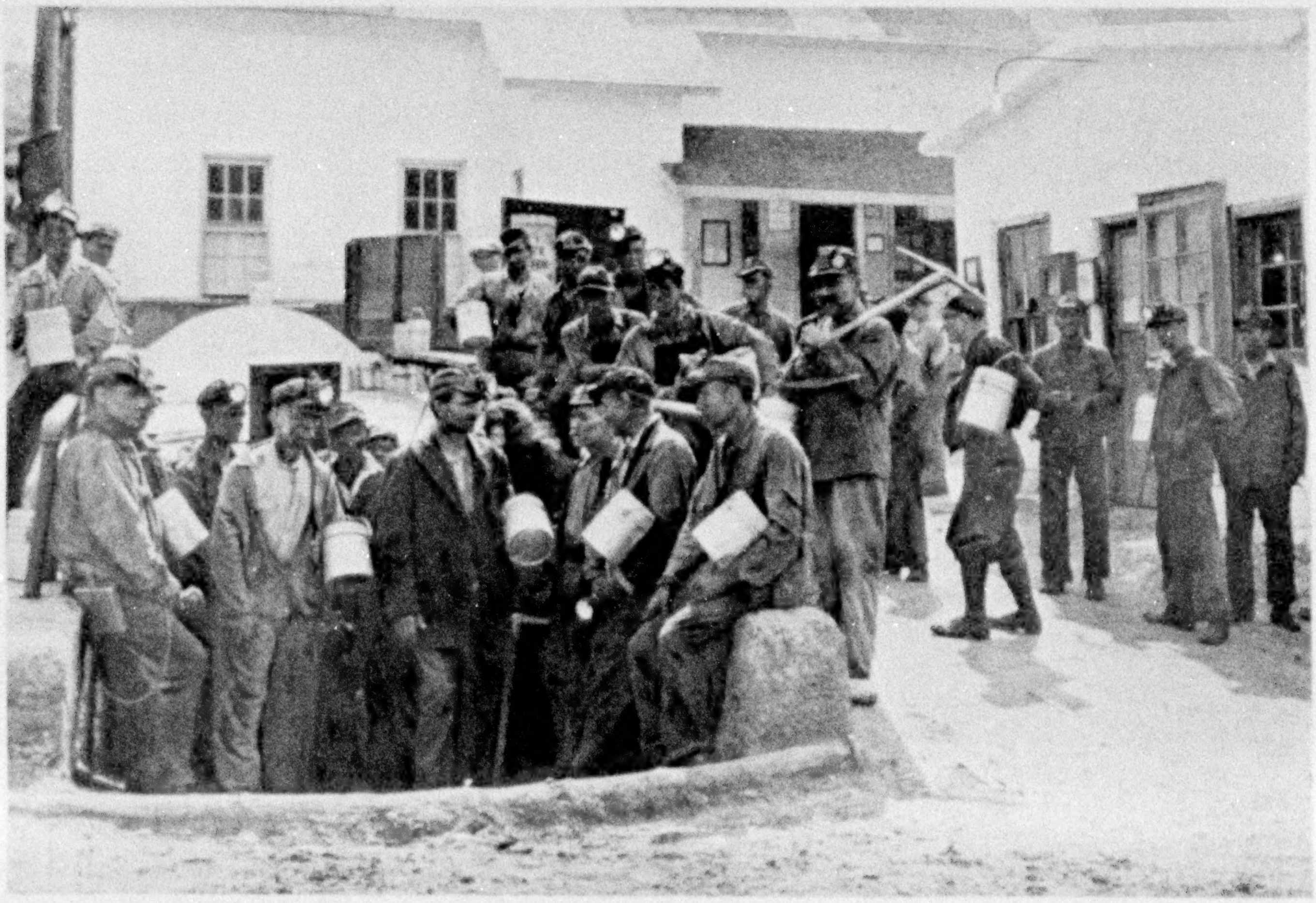
That across the deserts "you can see farther and see less" than anywhere else,



Photograph by T. Harmon Parkhurst

PLUCKY PIONEERS HAD TO BRIDGE THIS ROCKY CUT

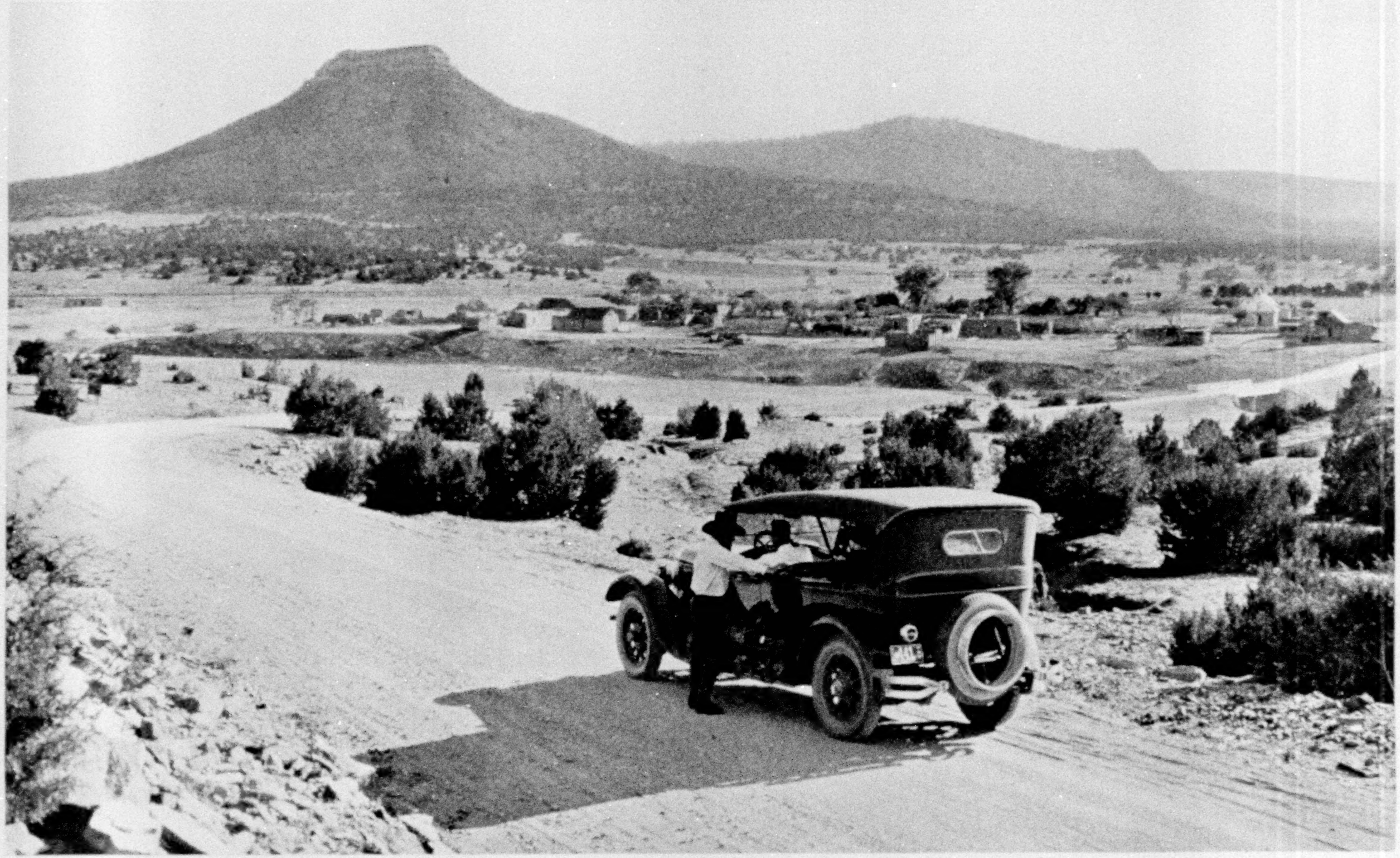
In Glorieta Pass, New Mexico, just west of the summit, the early emigrants built these abutments of stone and mortar—the last remaining bit of masonry anywhere on the Old Trail.



Photograph by O. E. Aultman

COLORADO COAL MINERS ENTERING A MANWAY NEAR TRINIDAD

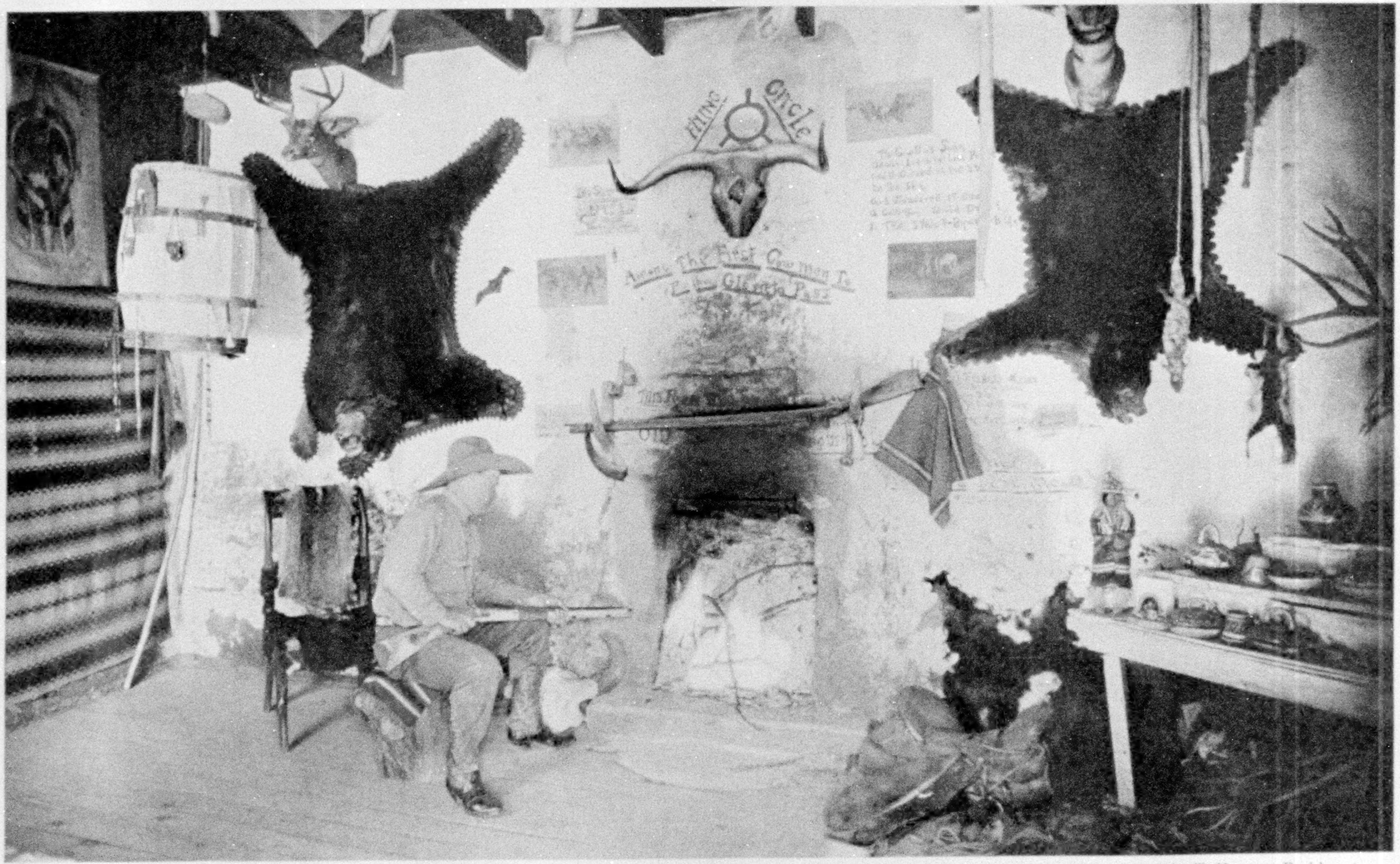
Las Animas County, of which Trinidad is the county seat (see. also, page 239), is the most important coal-producing area west of the Mississippi.



Photograph by Edward Kemp

STARVATION PEAK, A FAMILIAR OLD TRAIL LANDMARK IN NORTHERN NEW MEXICO NEAR LAS VEGAS

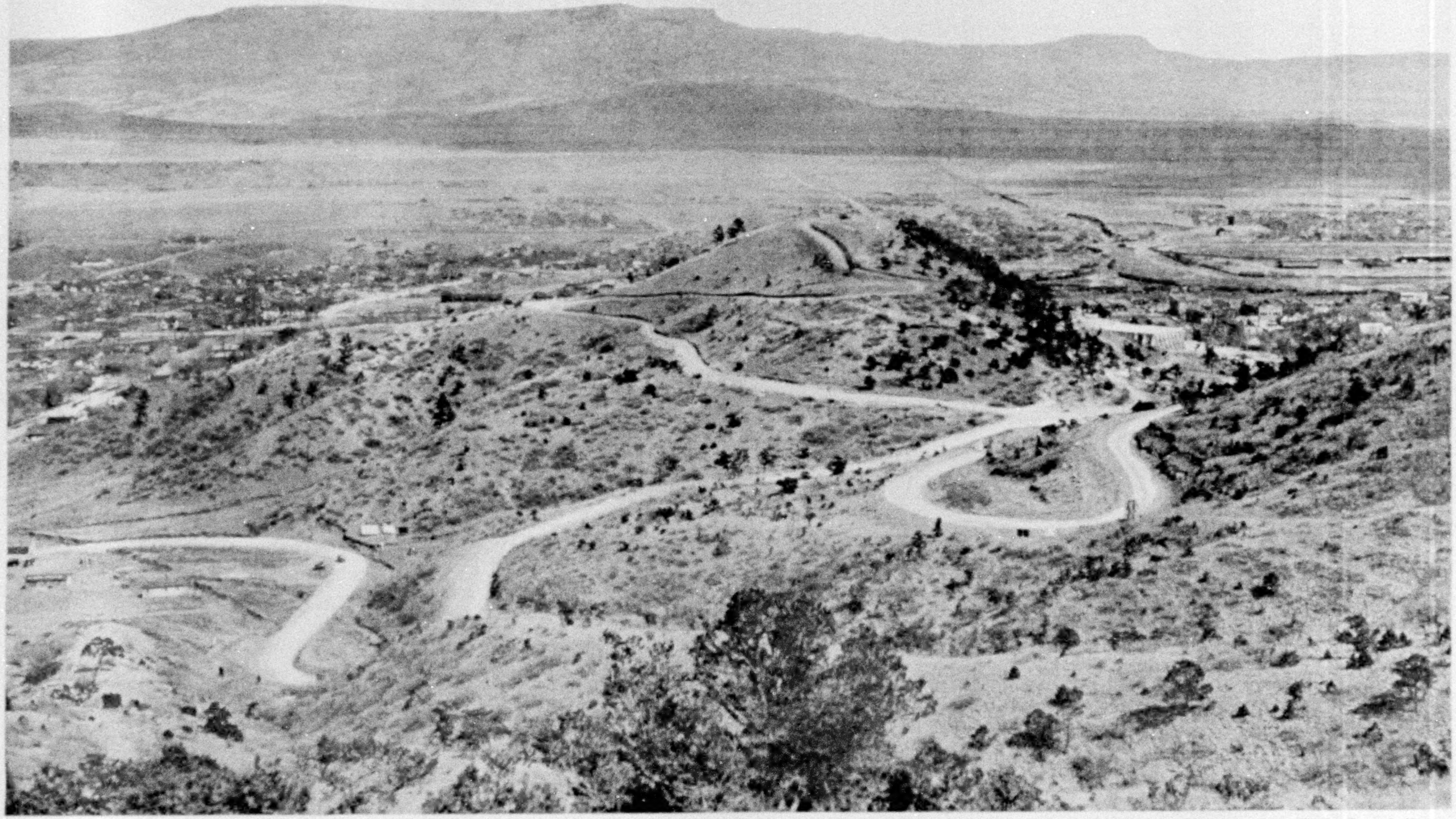
Explorers, trappers, Indian fighters, outlaws—all have used this great natural guidepost. For decades a cross has stood on its summit, in memory of emigrants who climbed up there to escape hostile Indians and starved to death.



Photograph by T. Harmon Parkhurst

INTERIOR DECORATORS MAY SHUDDER, BUT, AS THE COWBOY SAID, "I JUST FIXED UP THIS ROOM TO SUIT MYSELF"

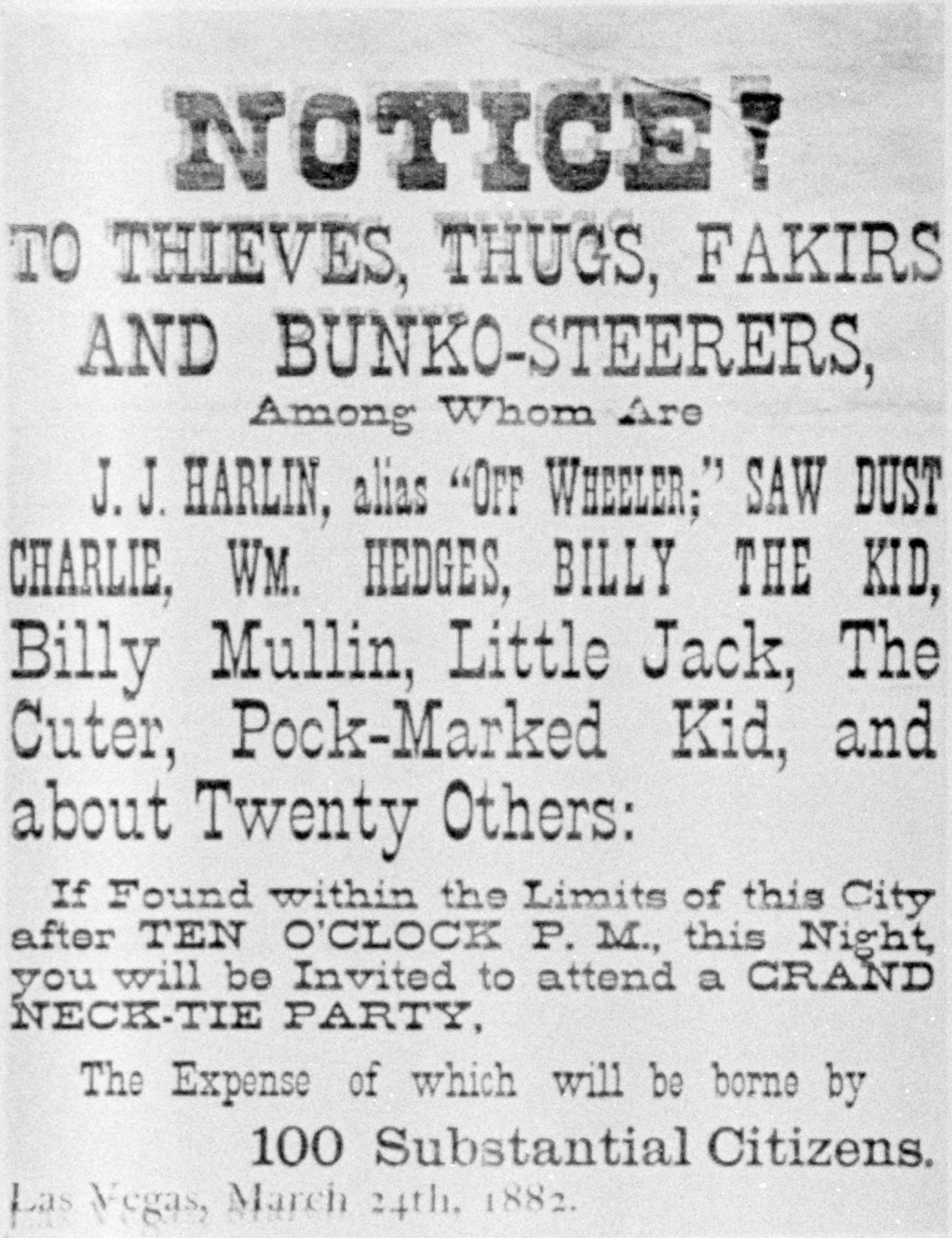
Beside the Old Trail, where it runs through Glorieta Pass, in northern New Mexico, lies the old Pigeon Ranch. For decades it was a resthouse for freighters, trappers, and emigrants bound for Santa Fe, about 20 miles distant. In this room Kit Carson and General Kearny boiled coffee and warmed their feet.



Photograph by R. L. Campbell

LIKE THE TRACK OF A GIANT SNAKE, THE OLD TRAIL TURNS AND TWISTS OVER RATON PASS

From a high point on this mesa, one with good eyesight may see into five different States: Colorado, New Mexico, Kansas, Oklahoma, and Texas. At the foot of the hill, in New Mexico, lies the clean, friendly town of Raton (see, also, text, page 242).



NOTICE!

TO THIEVES, THUGS, FAKIRS
AND BUNKO-STEERERS,

Among Whom Are

J. J. HARLIN, alias "OFF WHEELER;" SAW DUST CHARLIE, WM. HEDGES, BILLY THE KID, Billy Mullin, Little Jack, The Cuter, Pock-Marked Kid, and about Twenty Others:

If Found within the Limits of this City after TEN O'CLOCK P. M., this Night, you will be Invited to attend a GRAND NECK-TIE PARTY,

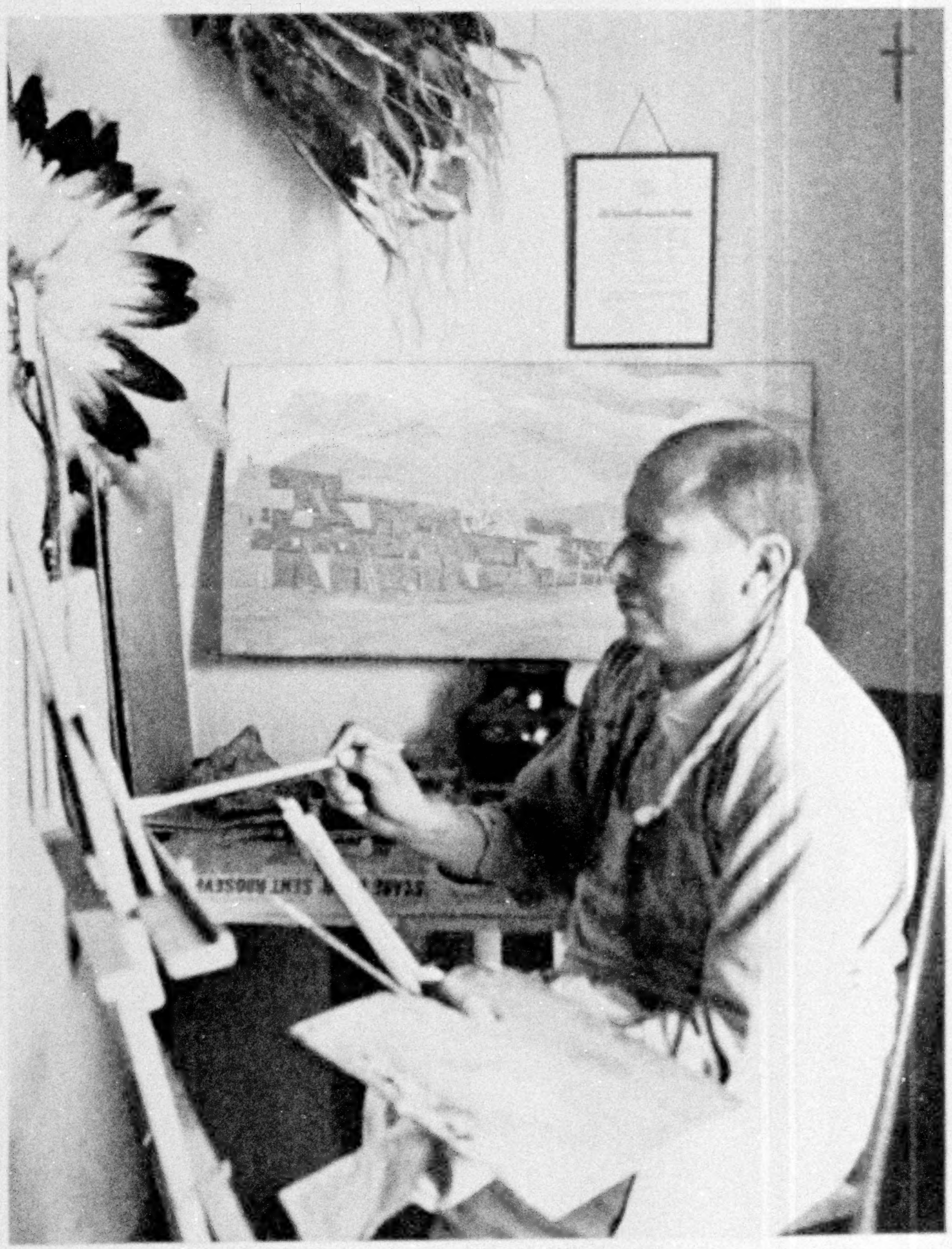
The Expense of which will be borne by

100 Substantial Citizens.

Las Vegas, March 24th, 1882.

WHEN THE ROPE WAS LAW

Judges, lawyers, policemen, handcuffs, and jails—the machines of justice—lagged behind as civilization followed the sundown; so honest pioneers had to protect themselves.



INDIAN SCENES AS AN INDIAN SEES THEM

Looking Elk, Indian artist, at work in his studio at Taos, one of the most popular art centers of America. On the wall is his framed certificate of membership in the National Geographic Society.

A COMBINE HARVESTER ALONG THE SANTA FE TRAIL

In emigrant days much of central and western Kansas was marked on maps as part of the "Great American Desert." But the advent of hard wheat and of power machinery has made this "desert" an agricultural region of enormous productivity.

is an old saying. Tales are told of tenderfeet, misled by the extreme clearness of the atmosphere, into sad misjudgments of distance. There is an old yarn of one newcomer who set out before breakfast to walk to what seemed to him a near-by mountain. At noon, apparently no nearer it than when he started, he came to an irrigation ditch only three feet wide; he sat down and took off his clothes to swim the river!

A SCENIC SIDE TRIP TO STRANGE TAOS

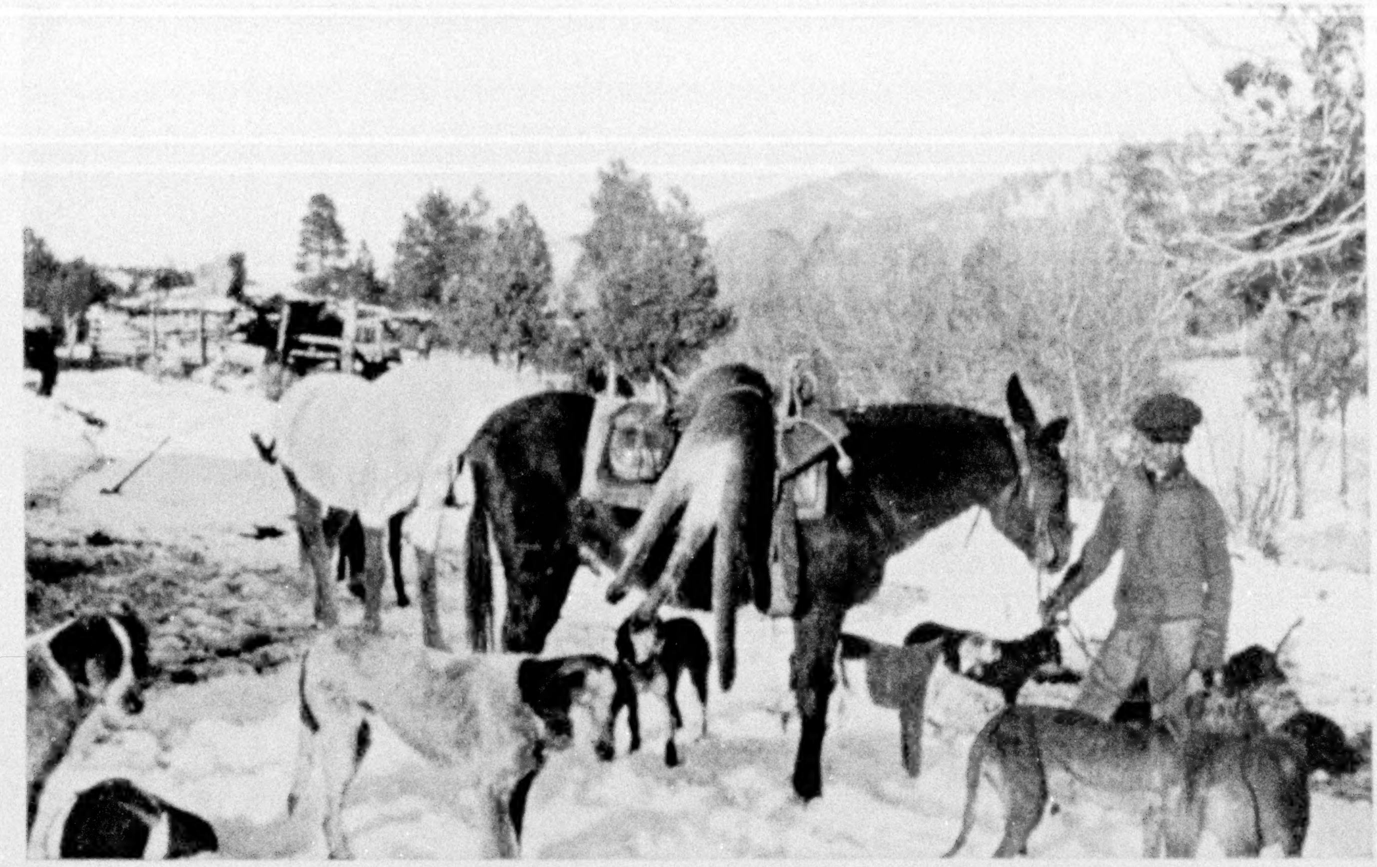
In all America there is no more amazing ride than that trip from Cimarron, in New Mexico, up the canyon of that name, over the 9,500-foot divide, and into ancient Taos. Over this fork of the Old Trail moved much of the traffic for Santa Fe before the Civil War.

Taos is a singular town. Its vast pueblo, or communal house, looks like pictures of lamaseries in Tibet (see Color Plate V). It has only about 2,000 inhabitants now; it had about that many in 1680, when the Pueblos revolted against the Spaniards. It has never had a boom; yet last season more than 85,000 tourists bumped over its unpaved streets.

Indians, galloping by my inn, awakened me at dawn. A topic of town debate on my visit was new hitch-racks for the plaza! And here flourishes a real, old-fashioned country store. It still trades goods for furs—when the Indians have any. "They'll trade for anything, from toys, wild-animal traps, and coffins to calico or threshing machines," a clerk told me.

For its size, Taos may well be the most interesting town in America. Its unspoiled aboriginal life, its odd communal houses, and astounding scenic beauty have inspired an artistic "gold rush," bringing scores of painters and poets to work here. Many have built studios of Pueblo-Spanish architecture, set in charming gardens.

Leading on from Cimarron town, the main Old Trail crosses several small streams and runs on southwest to meet at old Fort Union with that south fork which once took off at Cimarron Crossing, in Kansas. Fort Union, long of importance, is a ruin now. Built as a refuge for Indian-plagued emigrants, it was also the seat of



Photograph by R. L. Campbell

HUNTER AND HOUNDS, WITH MOUNTAIN LION SLAIN IN NEW MEXICO

Stockmen and Federal agents are active in the destruction of these predatory wild animals, which are a menace to live stock in isolated regions. The depredations of one notorious mountain lion during a career extending over a period of 11 years were estimated at $14,000.

a strong garrison and a storage place for army supplies.

A strategic point when Civil War swept the West, Union volunteers hastened through the snow from Denver to save it from Confederates marching up from Texas. Army names famous in history are written in its records, such as Stonewall Jackson and John A. Logan. General Grant came here toward the end of his illness to "feel again the lift of the high mesa, with its illimitable views."

Wagon Mound, not far from Fort Union, is named for a near-by hill which strangely resembles the canvas top of a covered wagon. Its adjacent wet, green valley meadows are popular now with goose-hunters; but time was when men with guns watched for bigger game than geese. Indians jumped a Taos trader's caravan here and his escape is an epic in Indian annals.

As this trader reached Wagon Mound, his carts loaded with furs for the East, "a band of Comanches appeared and made signs of peaceful intentions. But Hatcher, the trader, knowing well their tricks, gave them some sweets and then suddenly seized their chief by his scalp-lock and placed his hunting knife against the Indian's skull. He then ordered the chief to send away his warriors under penalty of being instantly scalped if he refused. It was not until Hatcher began actually cutting into the scalp and blood ran down into the Indian's eyes that he gave in and ordered his men to leave the vicinity."

A HORSEBACK RIDE THAT HAS NEVER BEEN EQUALED

Ox trains, crawling through floating dust, were like slow motion pictures; but all early travel wasn't slow. Army messengers achieved prodigious feats over this trail. There was Capt. Felix Aubrey's astonishing ride, made on a wager, which has never been equaled in the history of horsemanship on this continent. Using relays, he rode from Santa Fe to Westport (Kansas City), 775 miles, in *five days and thirteen hours!*—September 12-17, 1848.

West of Wagon Mound, toward Las Vegas, the Trail crosses the wide Plains, paradise of the cattlemen, and the drainage divide between the Rio Grande and

Mississippi basins. In Shoemaker Canyon, dotted with pines, cedars, and piñons, is a sanitarium built by Chicago department stores as a health resort for employees.

SPAIN'S GIFT TO OUR SOUTHWEST

Time and again through this region proof strikes you that the Spaniards who colonized New Spain were not all mere gold-seekers and adventurers. You have but to regard their early communities which still exist, or even the sites of decayed adobe homes, with their ancient sand-clogged irrigation ditches, hinting at gardens and orchards long gone, to see that they were more than marauders. They introduced many now familiar plants and animals into the Southwest.

The Conquest was not all romance; it had bread-and-butter aspects. As early as 1495 the Spanish had sent chickens, horses and mares, pigs, sheep, cattle, jacks and jennets, as well as millet and other seed, to the West Indies; they also sent gardeners, millwrights, and blacksmiths.

In time they transferred their whole agricultural system to the islands, and then to Mexico and our Southwest. They brought not only plants and seeds, but flour mills, sugar mills, and their system of irrigation and land laws. Father Kino gained his ascendancy over Pimas and Papagos by bringing them domestic animals and new fruits and vegetables. It was into this world of Spanish social forms and economics that the Old Trail led when it ran down into New Mexico from Raton Pass.

THE LAST STOP ON THE LONG, LONG TRAIL

Las Vegas, or "The Meadows," is a striking example of the old and new. What is now the "Old Town Plaza" was the freighters' stockade; here caravans stopped en route to Santa Fe. On the west side of this plaza, brick-faced now and used as an office, stands the small adobe house upon whose flat roof Gen. Stephen W. Kearny stood and first proclaimed the sovereignty of the United States over the vast Southwest that then was Mexico's.

To emigrants and traders, Las Vegas was the last haven on the Old Trail. Once here, they felt that the gravest Indian danger lay behind.

Freight, handled when the advancing railhead reached Las Vegas, made this a busy frontier trading post. From the big ranches of the Carlsbad and Roswell country, more than 200 miles away, wool was hauled here. Then Las Vegas called itself the greatest raw wool market in the world.

As a railway division point, it still serves a large territory of ranches, mines, and lumber mills.

If all the people in New Mexico and Arizona formed in line, they would hardly half equal the number of tourists who ride over this trail every year; and many a cruising cross-continent motor pilgrim, "holding her steady at 45 an hour," never suspects how much this history-soaked section had to do with shaping our map.

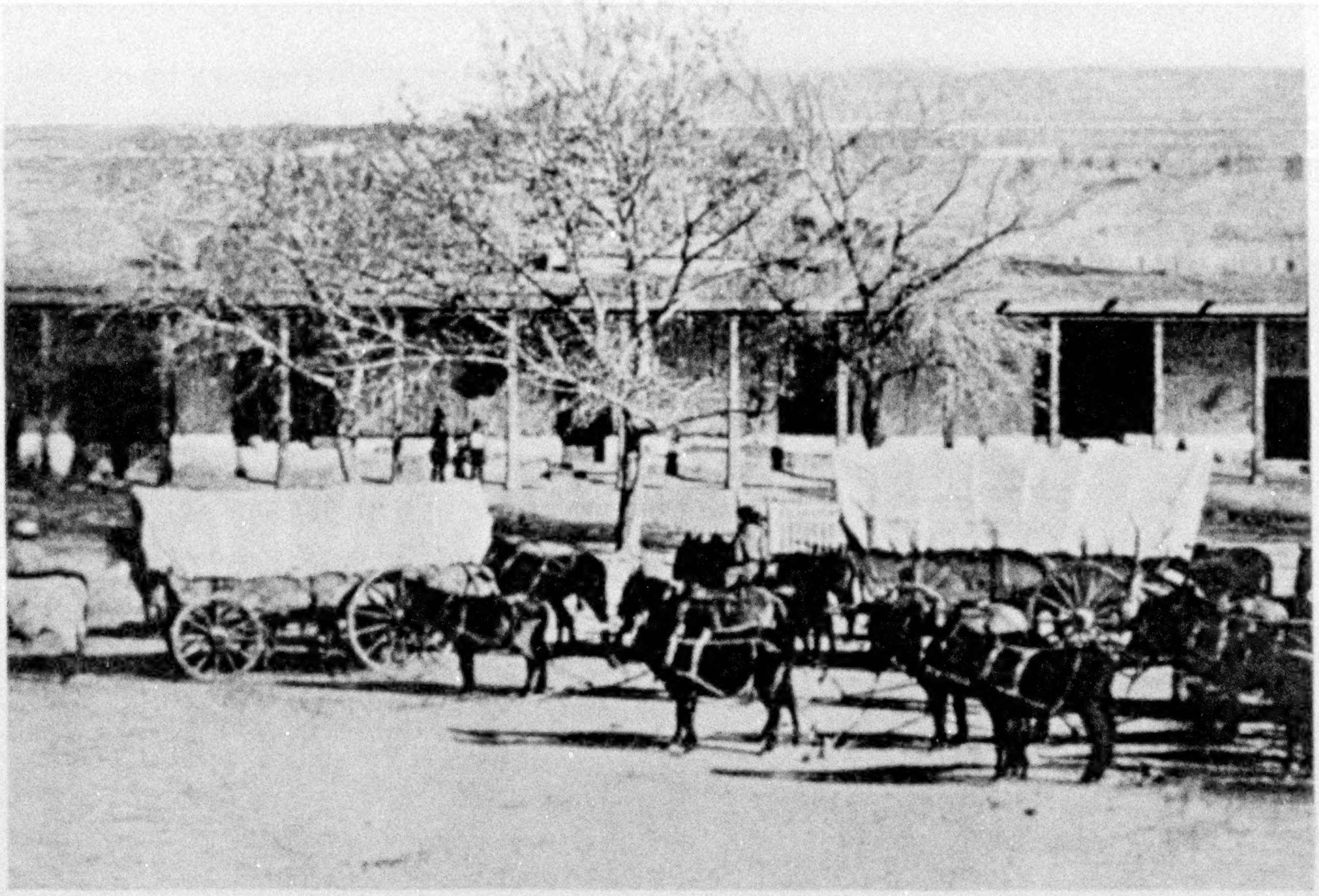
THROUGH ROMANTIC GLORIETA PASS

Ahead are Glorieta Pass and Apache Canyon. If in 1846 the Mexican army under Armijo had defeated Kearny here, instead of retreating and leaving his path open to Santa Fe, the western frontier of the United States might still run along the Arkansas River, with Mexicans ruling over the Southwest and California. Picks and steam whistles echo now, on near-by Willow Creek, where Apaches used to lurk, and a great aërial tramway carries lead and zinc 12 miles, from mine to mill.

Displaying now to the curious such relics as flintlocks, ox yokes, and bear traps, the old Glorieta Indian trading post and stagecoach station, with its crumbling adobe corral, hints mutely at the romance and adventure of other days. Here, *gracias á Dios,* was the last stop on the long, long trail! But a few miles more, winding over red earth, among green cedars and juniper, the path leads down to Santa Fe!

Except for the chimneys of the penitentiary, you can't see the town, because of the terrain, till you're right at it. It was down this last hill, in prerailway days, that freighters and stagecoach drivers came with happy whoops and a final spurt of speed. Shaven and dressed in their best, with new lashes in their whips to make them pop loud, they brought their wagon trains into Santa Fe like a circus into a country town.

"Los carros! Los Americanos! La entrada de la caravana!" Such were shrill



Photograph from Mrs. James A. Rolls

WHEN THE WEST WAS YOUNG

These covered wagons halted nearly fifty years ago in the plaza at Santa Fe. This is among the rarest historical photographs of the Old Trail days.

cries raised by excited Mexican women and children as the rattling wagons came to rest in the old plaza. With duties paid at the customhouse, came sale or barter for the owners of the trade goods, and for the drivers and hangers-on wild days and nights of fandangos, with drinking, carousal, barbaric abandon.

WHERE THE STARS AND STRIPES WERE RAISED BY KEARNY

Facing the shady plaza stands the ancient Palace of the Governors, where Pike was imprisoned. From it, for centuries, Spain gave law to this part of America, till Kearny raised the Stars and Stripes, on August 16, 1846.

"New Mexicans! We have come among you to take possession of New Mexico, which we do in the name of the Government of the United States. We have come as friends, to better your condition, and to make you a part of the American Republic. . . ."

So spoke General Kearny, ratifying the heroic work begun by Pike, Becknell, Kit Carson, Bent, St. Vrain, Gregg, and Marmaduke years before President Polk sent Zachary Taylor to the Rio Grande. America was in the making. Soon, by treaty, we gained practically all of the present New Mexico, Arizona, the southwest parts of Kansas and Colorado, Utah, Nevada, and all of California—California, from which in a few short decades a President of the United States was to come!

A path to empire! It passed Santa Fe, eventually toiling on to the Pacific. It branched north and south, and carried millions in men and goods to Eldorado. Trappers, traders, freighters, stagecoaches, the pony express—then railways and airplanes.

Santa Fe, City of the Holy Faith, well established when the Pilgrims landed, feasted the buckskinned beaver trappers and bartered leisurely when the traders came. It looks up now idly as the airplanes pass, or rides them if the spirit moves. But it is still Santa Fe. American by treaty, it clings to Spanish culture. In its Corpus Christi parade the Archbishop marches with leading citizens, halt-

Photograph by Edward Kemp

GIRL GUIDES PILOT TOURISTS THROUGH INDIAN TOWNS AND TO THE SCENIC MARVELS OF NEW MEXICO

Their combined knowledge, from intensive drill in the history, legends, ethnology, archeology, and industry of the Santa Fe country, leaves them undismayed even at such questions as "How do you speak Spanish?" and "What do Indians think about?" They serve a Santa Fe transport company which handles armies of Old Trail tourists every year.

ing to say prayers as incense swings in little shrines built before the homes of the faithful. It builds still with adobe and bakes bread in outdoor ovens of mud; it goes early to mass and wots not of booms. Spanish is used in the courts and children of both races speak it at play.

Art colonies it has and writers of fame. Its old Fonda, where Carson and Kearny lodged, is grown up now, a gorgeous Moorlike palace of yellow mud and carved beams, wherein the decorator has made her noble experiment and alien musicians in bright costumes play dreamy music of Don Quixote's land.

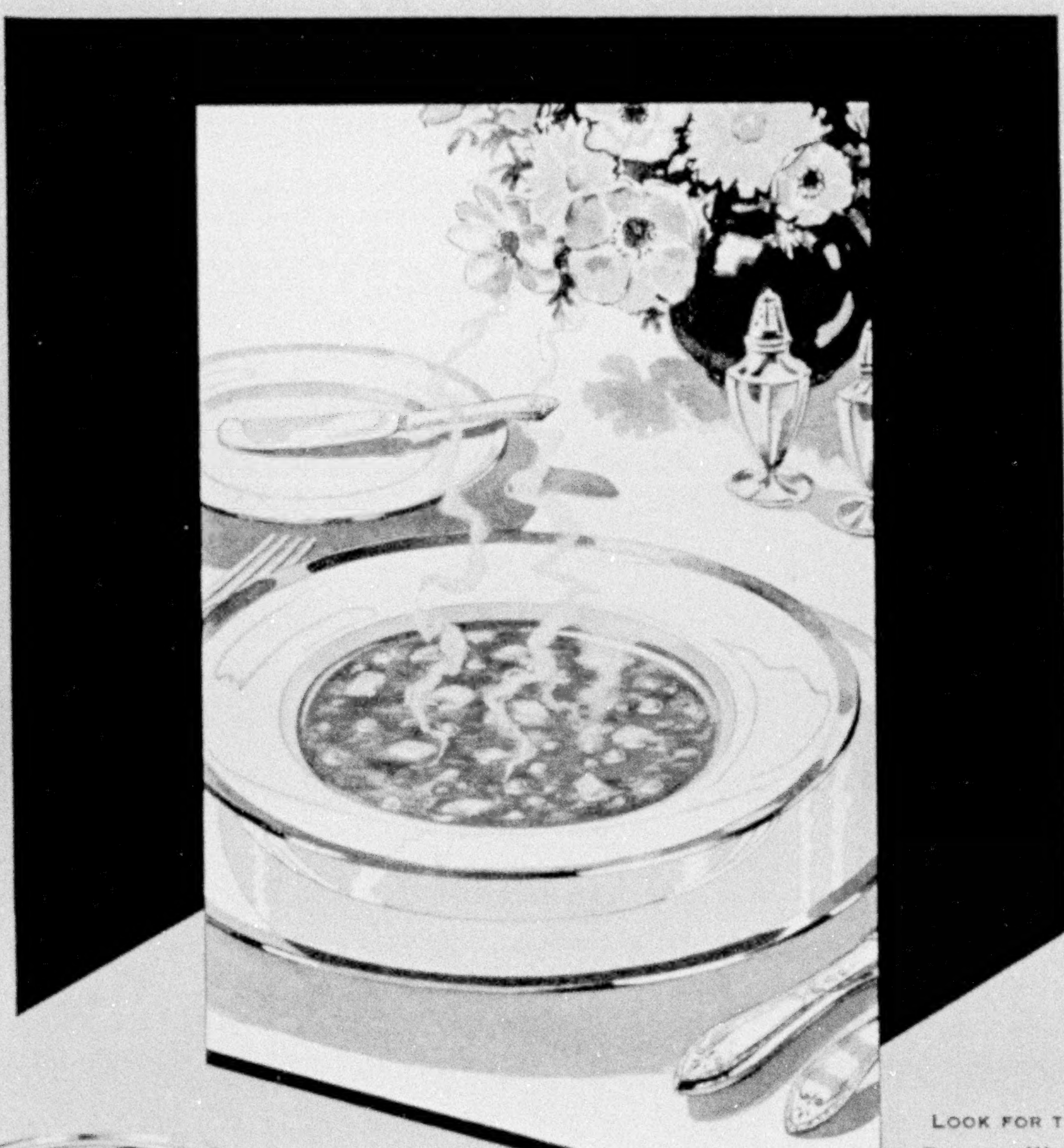
Tourists swarm like hungry locusts in green fields, for here is something different; in all America no spot is like it. More has been painted, sung, and written about Santa Fe than any other city its size in the United States. Spanish travelers were writing home about it three centuries ago!

But Santa Fe, like Rome or Samarkand, is a story in itself. It is the end of the Trail.

INDEX FOR JANUARY-JUNE, 1929, VOLUME READY

Index for Volume LV (January-June, 1929) of the National Geographic Magazine will be mailed to members upon request.

Hot soup is so healthful, so invigorating with cold summer meals!

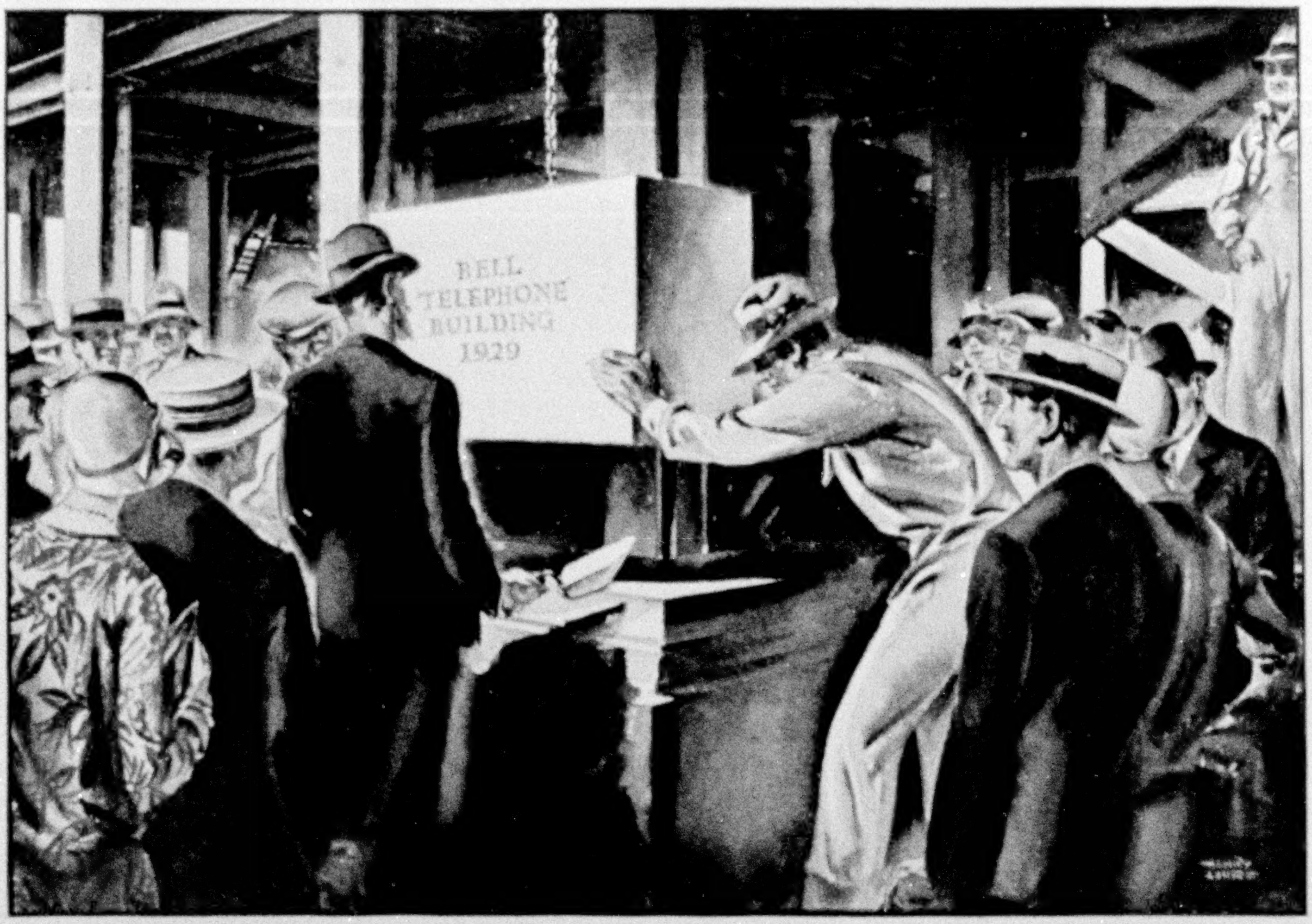


LOOK FOR THE
RED-AND-WHITE
LABEL

Campbell's
CONDENSED
VEGETABLE
SOUP

Your digestion in summer is required to do extra work in assimilating so many cold foods. Give your stomach the needed glow and encouragement of bracing hot soup. The cold foods taste all the better for it. And what a boon to summer housekeeping is Campbell's Vegetable Soup — hearty, already cooked, convenient! A real help these vacation days. 12 cents a can.

WITH THE MEAL OR AS A MEAL SOUP BELONGS IN THE DAILY DIET



THE BELL SYSTEM IS BUILDING AHEAD OF THE GROWTH OF THE COUNTRY

This is the telephone's job and goal

An Advertisement of the
American Telephone and Telegraph Company

THE United States is developing a new civilization. The telephone is an indispensable element in it. The Bell System is building ahead of the growth of this civilization. In 1929 the telephone budget for land and buildings is 54 million dollars, with new buildings rising in 200 cities. New equipment for central offices will cost 142 millions; exchange lines 120 millions; toll lines 119 millions.

The Bell System's total expenditure for plant and service improvements this year will be 559 million dollars.

This outlay is required because the telephone is a universal servant of this democracy. Business uses it to create more prosperity. Homes use it for comfort and protection, for keeping friendships alive and enriching life. Its general use enables each personality to extend itself without regard to distance.

The telephone ideal is that anyone, anywhere, shall be able to talk quickly and at reasonable cost with anyone, anywhere else. There is no standing still in the Bell System.

$175

F. O. B. Detroit

THE NEW KELVINATOR Four

The Record Price for Kelvinator Quality and Reliability

THOUSANDS of families for years have staunchly believed that there is no equal for Kelvinator reliability and quality in automatic electric refrigeration.

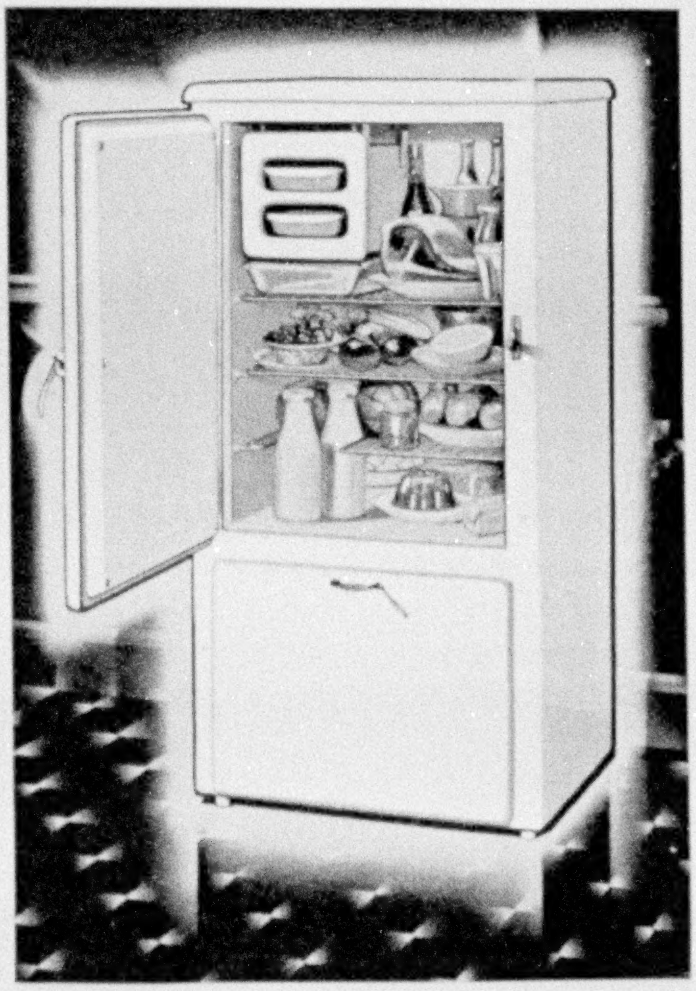
They have patiently waited until that reliability and quality would come to them at the most favorable price in Kelvinator history.

Today their waiting is ended. The new Kelvinator Four is the first Kelvinator ever to be marketed at anything like its price.

The new Kelvinator Four confers unprecedented benefits to health and economy upon every home which adopts it.

Food is kept at the scientifically correct cold of 40 to 50 degrees. It is better kept, therefore more appetizing, more healthful. Flavor is improved. Milk is kept pure and sweet. Greens are fresher, more crisp. Spoilage is eliminated. The family budget is conserved.

All this with the ultimate degree of automatic control and operation. The unvarying range of cold is automatically maintained day in and day out, regardless of changing temperatures inside and outside the home.

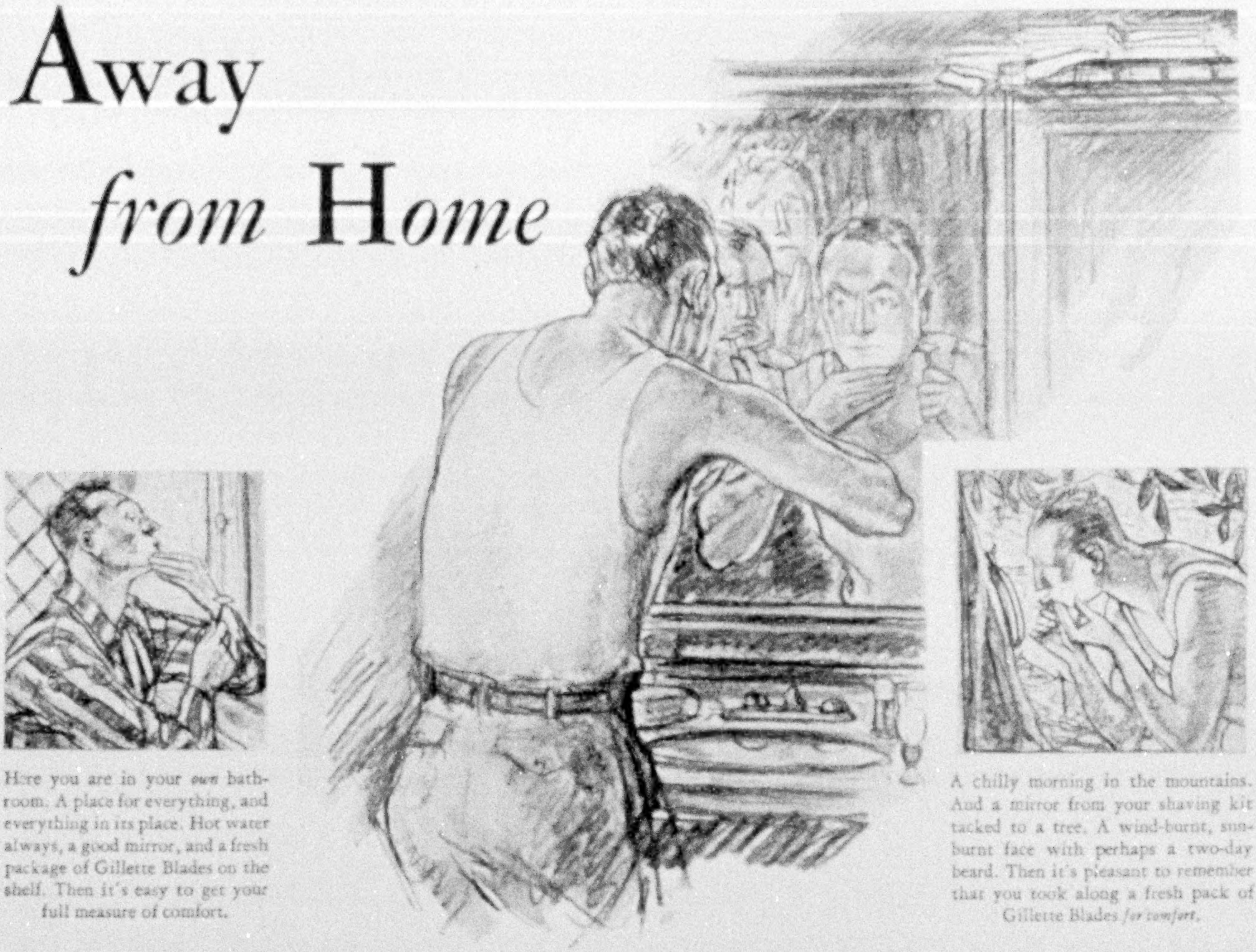


All Kelvinator dealers offer immediate installation on the basis you can afford, by means of Kelvinator's attractive ReDisCo monthly budget plan.

KELVINATOR CORPORATION
DETROIT, MICHIGAN
KELVINATOR OF CANADA, LIMITED, LONDON, ONT.
KELVINATOR LIMITED, LONDON, ENGLAND

We Endorse the National Food Preservation Campaign For September

Away *from* Home



Here you are in your *own* bathroom. A place for everything, and everything in its place. Hot water always, a good mirror, and a fresh package of Gillette Blades on the shelf. Then it's easy to get your full measure of comfort.

A chilly morning in the mountains. And a mirror from your shaving kit tacked to a tree. A wind-burnt, sunburnt face with perhaps a two-day beard. Then it's pleasant to remember that you took along a fresh pack of Gillette Blades *for comfort*.

. . . you can't expect as smooth a shave

WHETHER you shave quietly and luxuriously at home; or strenuously, over the shoulders of other harassed travelers in a Pullman washroom; or primitively in camp, with the cold lake for your wash basin — no matter how different the shaving conditions may be—put a fresh Gillette Blade in your holder and you're sure of a smooth, comfortable shave.

Your guarantee of this unchanging comfort is the careful honing, the delicate stropping that Gillette's marvelous machines give every blade. No human hand, however expert, however patient or tireless, could ever work such comfort into a blade.

But you can count on your Gillette Blade to give you a comfortable shave anywhere

And Gillette goes one step further. It sets aside almost half of all its blade department workers to do nothing but inspect your blades—and rewards with a bonus the endless search for any blade that may be below par.

You see, eight out of ten men in America shave with a Gillette and expect every Gillette Blade to do its duty. So every blade *has* to be good, no matter how difficult the conditions it goes up against — hard water, cold water, tough beards, tender skins, slapdash lather — a dozen varying conditions that affect the comfort of your shave. Conditions change — the blade doesn't. That's why you can always slip a fresh Gillette Blade in your razor and enjoy a swift, sure shave wherever you are. Gillette Safety Razor Co., Boston, U. S. A.

King C Gillette

THE only individual in history, ancient or modern, whose picture and signature are found in every city and town, in every country in the world, is King C. Gillette. This picture and signature are universal sign-language for a perfect shave.

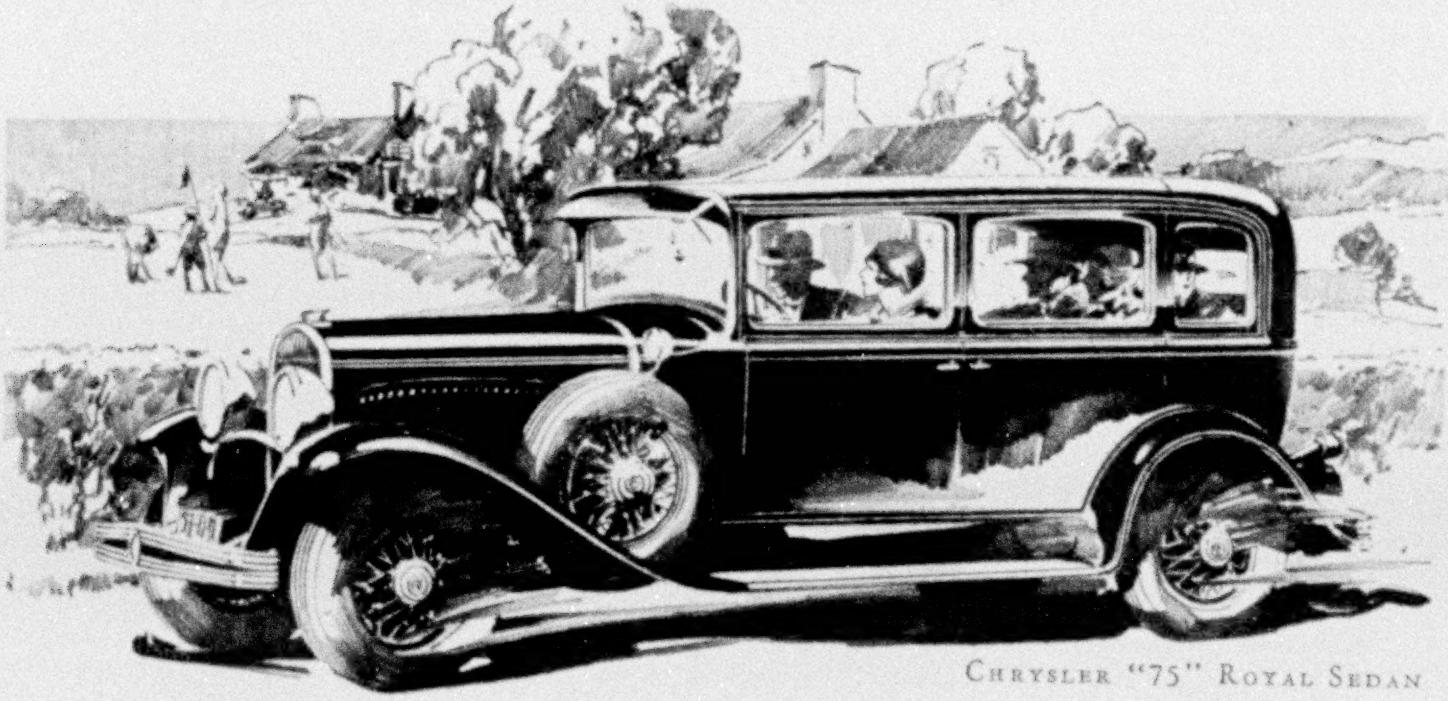
Gillette

STOOD ALONE FIVE YEARS AGO ✢ STANDS ALONE TODAY

DEC
6
1924

"Chrysler came into a seemingly crowded market and almost immediately swept its way into unprecedented acceptance. That which ordinarily takes years to achieve was won almost overnight. ✢ Why? Because Chrysler brushed aside outworn traditions in engineering, in design, and in performance. ✢ It brought to bear both scientific exactness and artistry. ✢ That is why Chrysler has taken the country by storm — why it still stands and will long stand alone — why, if you want what Chrysler gives, Chrysler alone can satisfy you."

— Advertisement, Literary Digest, December 6, 1924



Chrysler "75" Royal Sedan

CHRYSLER'S PLACE IN THE SUN

PRIOR to five years ago there were no Chrysler motor cars. In five years, Chrysler, from a standing start, has overtaken leading cars of three, four and five times its age.

The spectacle of a newcomer so swiftly becoming a leader can bring the logical mind to but one conclusion: There must be something remarkable, something altogether different and superior, in the cars that Chrysler builds.

There is, in Chrysler performance, a thrilling sense of endless power, a swift eagerness of life and spirit, a feeling of perfect balance and safety that cannot be experienced except in a Chrysler. Artistic freshness and modern charm in Chrysler design distinguish Chrysler in any company.

There is a restfulness in Chrysler comfort quite without counterpart.

Drive a Chrysler car today, and realize why Chrysler has won so glittering a place in the sun — and why Chrysler goes on and on to ever-increasing popularity and prestige the world over.

CHRYSLER

CHRYSLER MOTORS PRODUCT

WHAT'S THE COMPRESSION OF YOUR CAR?

THE automobile industry is now beginning to present its new models. Notice how many have engines of high compression, designed to take advantage of Ethyl Gasoline.

For Ethyl is the standard high compression fuel. It permits a tighter squeezing of the gasoline before ignition, so that more power results with each stroke of the piston.

Ordinary gasoline can stand only a certain amount of compression; beyond that it "knocks" and loses power.

That is why automotive science developed Ethyl Gasoline. It is good gasoline *plus* Ethyl fluid, containing tetraethyl lead, which eliminates knocking as compression is increased.

Through the service of leading oil companies of the United States, Canada and Great Britain, you will now find Ethyl Gasoline available wherever you drive.

But you don't have to have a new car to enjoy the benefits of Ethyl. Its virtues are especially noticeable in older cars of average compression. For it "knocks out that knock." Ride with Ethyl today. Look for the familiar Ethyl emblem.

ETHYL GASOLINE CORPORATION · 25 Broadway, New York City
56 Church St., Toronto, Can. 36 Queen Anne's Gate, London, England

Any car runs better if I'm in it.
Ethyl

ETHYL
GASOLINE

GOOD GASOLINE *plus* ETHYL FLUID *equals* ETHYL GASOLINE

Knocks out that "knock"

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Presenting

THE NEW

WILLYS-KNIGHT GREAT SIX

The most distinctive and most luxurious Willys-Knight ever designed

The new Willys-Knight Great Six is the most beautiful and most luxurious automobile that Willys-Overland's designers have ever created.

Such graceful sweep of line, such perfection of symmetry, such rich harmony of color, such tasteful elegance of finish—all combine in a distinguished ensemble that testifies to the achievement of new ideals in motor car design.

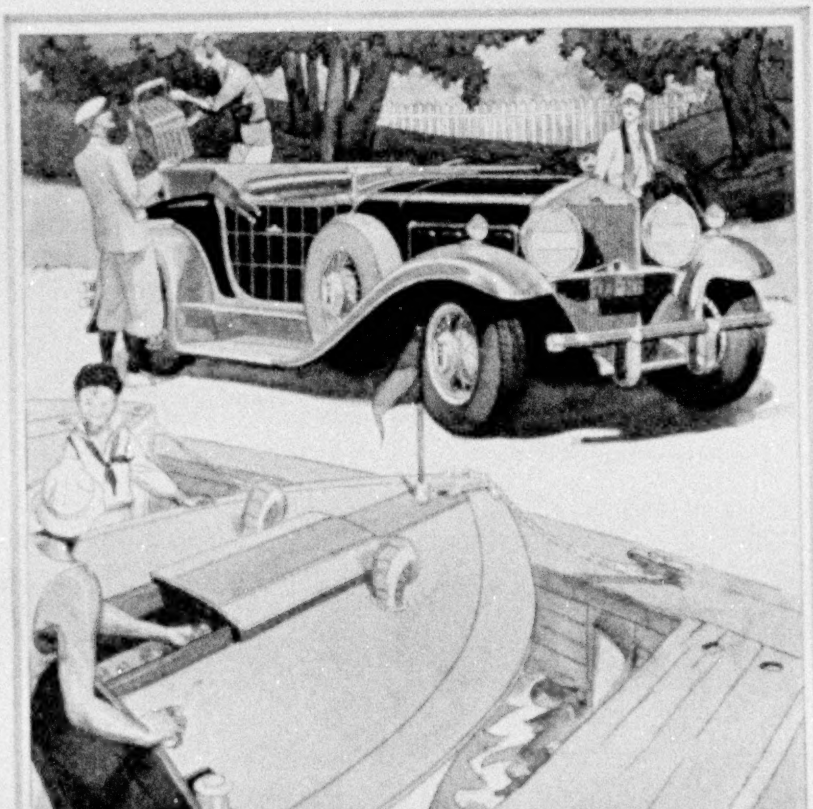
In engineering as in artistry, the new Willys-Knight Great Six is advanced to a degree which few of the most costly automobiles ever attain. The *patented* Willys-Knight double sleeve-valve engine reaches its highest development—faster, more powerful and more efficient than ever before.

WILLYS-OVERLAND, INC.
TOLEDO, OHIO
WILLYS-OVERLAND SALES CO. LTD.
TORONTO, CANADA

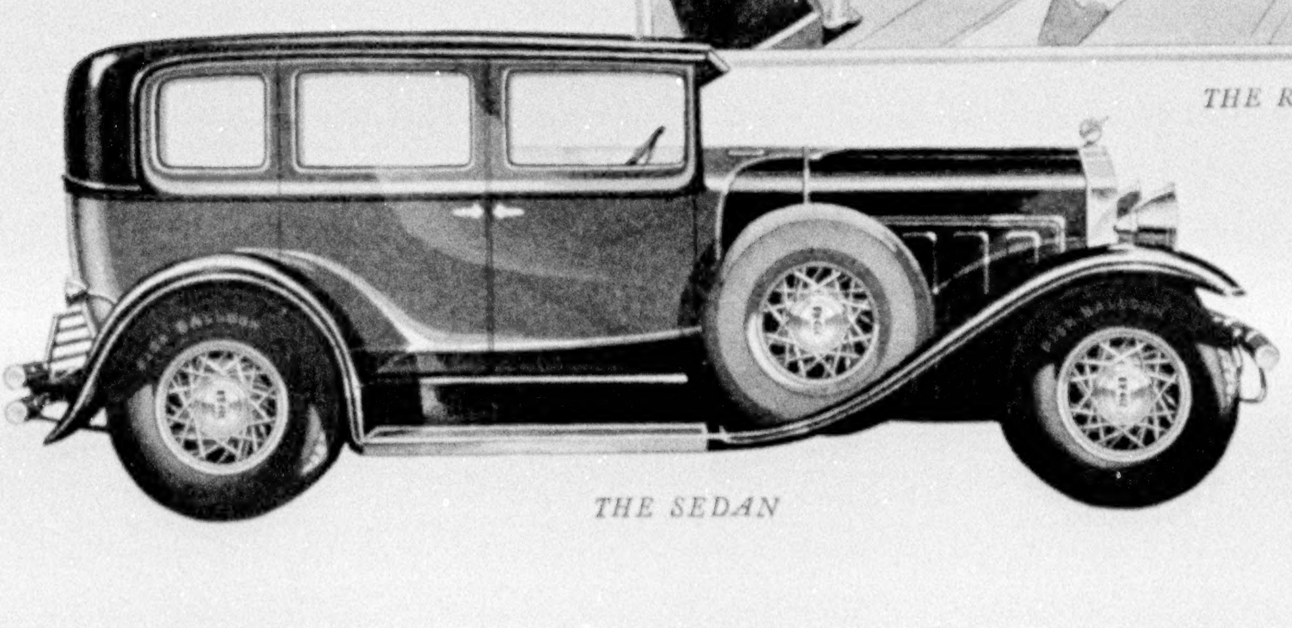
WILLYS-KNIGHT GREAT SIX SEDAN
ROADSTER • COUPE • 5-PASSENGER COUPE
—each model

$1895

Six wire wheels and trunk rack standard equipment. Willys-Knight "70-B" models $1045 to $1265. Wire wheels included. All prices f. o. b. Toledo, Ohio, and specifications subject to change without notice.



THE ROADSTER



THE SEDAN

Founded by . . . the Nation's Founders

MUTUAL PROTECTION IS AVAILABLE FOR THESE CASUALTY RISKS:

Accident and Health
Automobile (all forms)
Burglary and Theft
Workmen's Compensation
Liability (all forms)
Plate Glass
Property Damage
Fidelity

BENJAMIN FRANKLIN—Thomas Jefferson—John Marshall; these were the founders of mutual insurance!

Perhaps something of the sterling character of these illustrious men was breathed into mutual insurance, for mutual management is noted for conservatism, and mutual corporations for stability, for paying losses promptly and fully, for rendering service ably and generously.

In the field of life insurance, more than 90,000,000 policies issued by mutual companies of the United States give protection to their beneficiaries, to the extent of more than 65 billion dollars—this is more than three-quarters of all the life insurance written by all companies.

1803 mutual fire insurance companies in the country have policies in force totaling 32 billion dollars.

The twenty old line, legal reserve mutual casualty companies listed below have combined assets in excess of 85 million dollars; are giving protection to more than 500,000 policyholders—and have returned to policyholders in the form of dividends over $100,000,000.

Address Mutual Insurance, Room 2200, 180 North Michigan Avenue, Chicago, Ill. for worth-while booklet on mutual casualty insurance.

MUTUAL CASUALTY INSURANCE

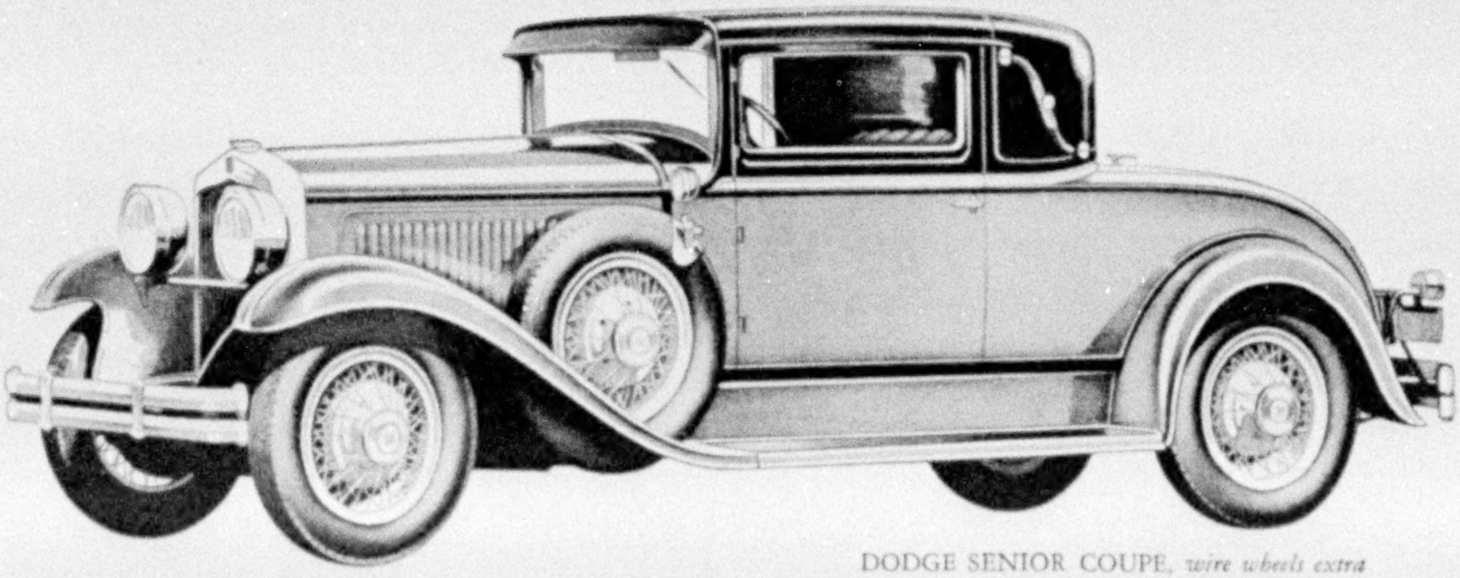
These Old Line Legal Reserve Companies Are Members of
NATIONAL ASSOCIATION OF MUTUAL CASUALTY COMPANIES *and* AMERICAN MUTUAL ALLIANCE

Allied Mutuals Liability Insurance Co., *New York City;* American Mutual Liability Insurance Co., *Boston, Mass.;* Builders Mutual Casualty Co., *Madison, Wis.;* Central Mutual Casualty Co., *Kansas City, Mo.;* Employers Mutual Casualty Co., *Des Moines, Ia.;* Employers Mutual Liability Insurance Co., *Wausau, Wis.;* Exchange Mutual Indemnity Insurance Co., *Buffalo, N. Y.;* Federal Mutual Liability Insurance Co., *Boston, Mass.;* Hardware Mutual Casualty Co., *Stevens Point, Wis.;* Interboro Mutual Indemnity Insurance Co., *New York City;* Jamestown Mutual Insurance Co., *Jamestown, N. Y.;* Liberty Mutual Insurance Co., *Boston, Mass.;* Lumbermens Mutual Casualty Co., *Chicago, Ill.;* (American) Lumbermens Mutual Casualty Co. of Illinois, *New York City;* Merchants Mutual Casualty Co., *Buffalo, N. Y.;* Michigan Mutual Liability Co., *Detroit, Mich.;* Mutual Casualty Insurance Co., *New York City;* Texas Employers Insurance Association, *Dallas, Tex.;* U.S. Mutual Liability Insurance Co., *Quincy, Mass.;* Utica Mutual Insurance Co., *Utica, N. Y.*

The Masterpiece of a Master Hand

THE SENIOR is the aristocrat of all Dodge Brothers cars. Quality radiates from its lines. Comfort—richness—quiet elegance distinguish its interiors. And only the best taste—and the smartest note of modern fashion—govern the choice of its colors, its style-features, its many attractive refinements. No matter how expensive a car you have owned before, the Dodge Brothers Senior will make a deep and winning impression. Largest, handsomest and finest of all Dodge Brothers cars—its prices are unapproached for such generous fine-car value.

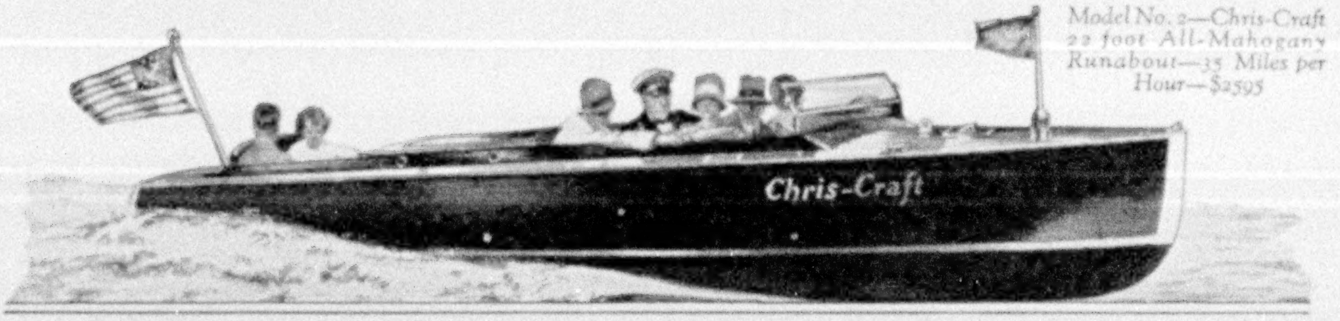
Convenient Terms



DODGE SENIOR COUPE, *wire wheels extra*

DODGE BROTHERS SENIOR

CHRYSLER MOTORS PRODUCT



Model No. 2—Chris-Craft 22 foot All-Mahogany Runabout—35 Miles per Hour—$2595

Go-where you will on the water

WITH a Chris-Craft at your landing, every body of water—every river, lake, bay, oceanside, becomes a highway—a never-ending road on which you may travel speedily and comfortably to any waterside destination.

At the speed of a motor car your Chris-Craft will carry you to and from your downtown office—your home—your summer place—your clubs—your fishing haunts—or favorite outing spots—and do it with perfect safety to yourself and guests. There's a Chris-Craft merchant near you who will introduce you to this newest and most fashionable form of travel. Let him arrange a Chris-Craft guest ride for you and your family—without obligation.

A confidential Deferred Payment Plan is available. You can now buy a Chris-Craft out of income just as you buy a motor car. Write for the new Chris-Craft catalog.

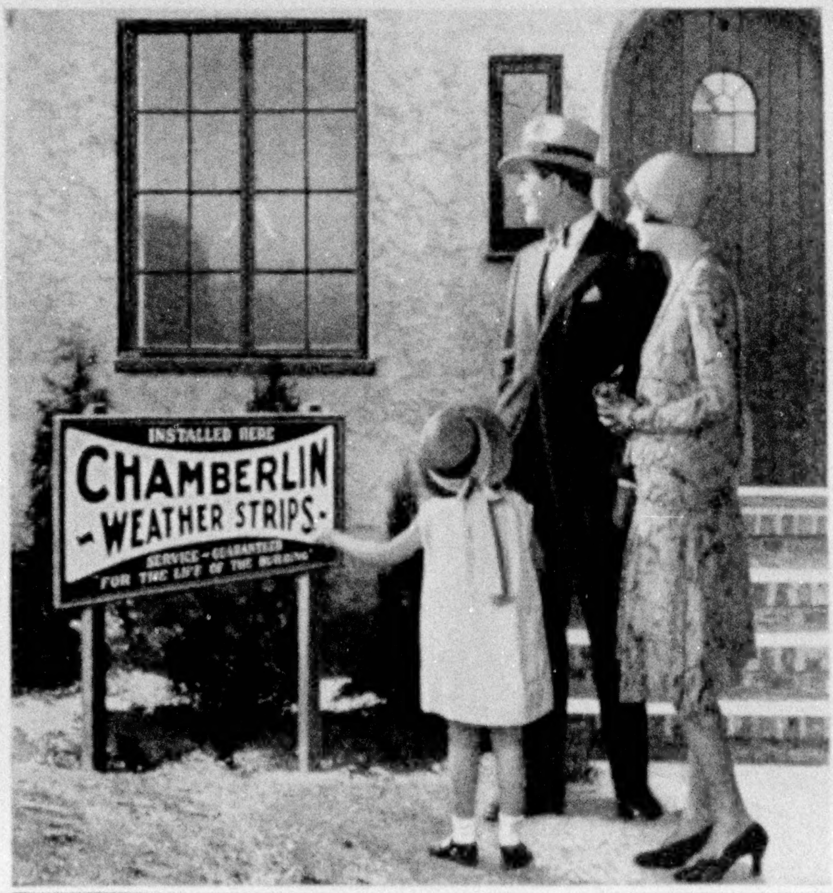
CHRIS SMITH & SONS BOAT COMPANY
768 Detroit Road, Algonac, Michigan
New York Factory Branch: 1 West 52nd St. at 5th Ave.

18 Models
Runabouts
Sedans
Commuters
Cruisers

Chris-Craft

World's Largest Builders of All-Mahogany Motor Boats

22 to 38 feet
30 to 45 Miles an Hour
82 to 225 Horsepower
8 to 26 Passengers
$2235 to $15,000



CHOOSE CAREFULLY—ENJOY YEAR 'ROUND PROTECTION AND CONVENIENCE

Chamberlin protection is positive. And Chamberlin responsibility permanently assures the high degree of draught-proofness, fuel saving and ease of window operation which Chamberlin craftsmanship and factory-controlled installation alone can provide. The Chamberlin system permits of no factors of uncertainty. For Chamberlin designs and manufactures its weather strips—and factory-trained Chamberlin mechanics install them exclusively. Chamberlin's 36 years of leadership tell a conclusive story.

CHAMBERLIN METAL WEATHER STRIP COMPANY, DETROIT, MICHIGAN

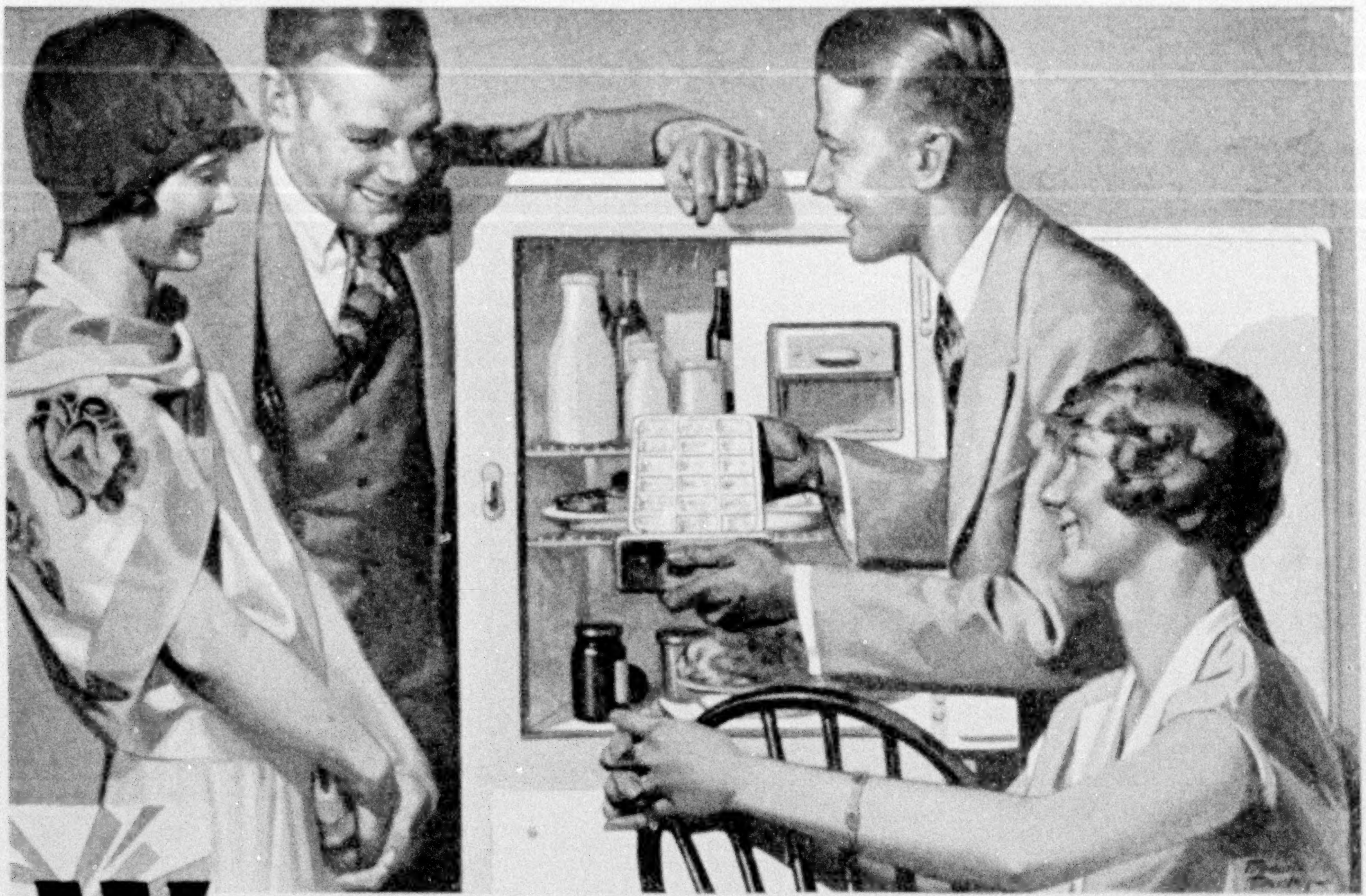
Over 100 Factory Sales-Installation Branches throughout the United States

CHAMBERLIN *Weather Strips*

FREE—booklets on how to enjoy real home comfort at a saving to you. Also complete estimate on Chamberlin Protection for______windows______doors.

Name____________________

Address____________________ (FC-236)



Where else *could you invest your money so wisely?*

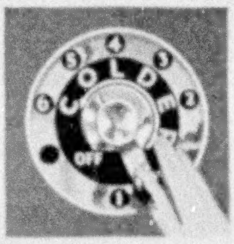
..as in the purchase of Frigidaire

WHAT could you buy for your home that would mean so much to every member of the family in health, convenience and in the saving of time and work?

Hundreds of thousands of home owners would tell you that they would sooner give up any other item of household equipment than Frigidaire.

Frigidaire renders a unique service . . . a service that cannot be duplicated by any other electric refrigerator or type of refrigeration.

Here is an automatic refrigerator that is so quiet that you don't hear it start, or stop, or run. Here is real beauty and symmetry of design, clean surfaces that stay clean, a gleaming porcelain enamel or Duco finish, a cabinet with all mechanical parts completely enclosed. Here are elevated food shelves to make stooping unnecessary . . . extra power to guarantee that food will be kept safely cold on the hottest days. And here is the "Cold Control" that gives faster freezing of ice and perfect results in the making of salads and desserts.



The "Cold Control" for faster freezing of ice.

Only Frigidaire offers this combination of important features of beauty and power and convenience. They have made Frigidaire the choice of more buyers than all other electric refrigerators combined.

Low prices, convenient terms and exceptionally low operating cost put Frigidaire within reach of every home.

See it today at display rooms everywhere, or write for an illustrated catalog and a copy of the new Frigidaire recipe book.

Frigidaire Corporation, *Subsidiary of General Motors Corporation*, Dept. Y-321, Dayton, Ohio.

Please send me a free copy of the Frigidaire catalog and the recipe book of frozen delicacies.

Name...

Address..

If you live in Canada, address Frigidaire Corporation, 1604 Sterling Towers, Toronto, Ont.

FRIGIDAIRE

The QUIET *Automatic Refrigerator*

GOOD NIGHT

The Book-Cadillac Hotel

ON WASHINGTON BOULEVARD
THE STREET OF FINE SHOPS

DETROIT

Good night

.........sleepy ... well I'll surely say so and oh ho a *soft* bed. Hm mm m ... $4.00—$5.00 for a room like this, twenty-seven stories above the street and quiet as a mouse ... cool winds surely breeze in *these* windows ... I'm tired ... we'll *need* blankets ... the lobby was *alive* tonight and cheerful as October with those sea blues and greens and pennon reds and rusty golds ... a match, Bob? *what a bed* ... only $3.50 you say? ... we elbowed the wise and the kings tonight, ay Bobbert and—so did they ... where did *you* eat? ... Blue Room, Grill, Venetian Room? ... did John stand *en garde?* ... Well, I'm glad I know *you* ... *I* dined with restless folk and I'll whistle Blue Room fiddler's tunes in my sleep ... well I guess *not* ... not in a bed like *this* what and ho isn't it *glorious?* ... g'night ... here goes ... I'm in ... only four bucks did you say, each? ... they tell that ... these beds ... soft ... sleepy ... as ... winter's ... night ... wonderful! *Good night.* See you soon.

THE BOOK-CADILLAC HOTEL

Carl M. Snyder, Managing Director

DETROIT

The WHO'S WHO *of the* Woods

— to make your summer rambles more enjoyable

The Book of Wild Flowers

250 color portraits of wild flowers and plants and many monochrome engravings illustrate fascinating descriptions of flowers by Dr. William Joseph Showalter and other authorities. This practical guide to wild flowers and shrubs is an indispensable tool for every suburban and country home. 243 pages. Molloy binding, $4.00.

The Book of Birds *(Revised Edition)*

In this open sesame to the bird life of field and forest, interesting chapters are devoted to "Common Birds of Town and Country," "The Warblers," "Game Birds," and "Bird Banding." Louis Agassiz Fuertes' 331 full-color portraits enable identification of feathered friends. Many engravings; 230 pages. Molloy binding, $4.00.

The Book of Fishes

Whether you fish in brook, lake or sea, you will find pleasure and information in this wonder book by John Oliver La Gorce and other authorities. Illustrated with full-color portraits of 92 fishes in action and 134 monochrome engravings, its 243 pages are crowded with interest for both adults and children. Molloy binding, $4.00.

All prices postpaid in U. S. A. and Canada.
For mailing abroad, add 25 cents each.

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WASHINGTON, D. C.

Visit the Mayan Excavations via PROGRESO from New Orleans

Archeologists are there finding the evidence of a wonderful American civilization dating back to 96 B. C. Stop at quaint picturesque nearby Merida. Comfortable hotels.

A delightful 2½-day trip by the modern S. S. Munplace (7000 tons)
Sailings from New Orleans every 10 days.

MUNSON S. S. LINES

67 WALL STREET, NEW YORK
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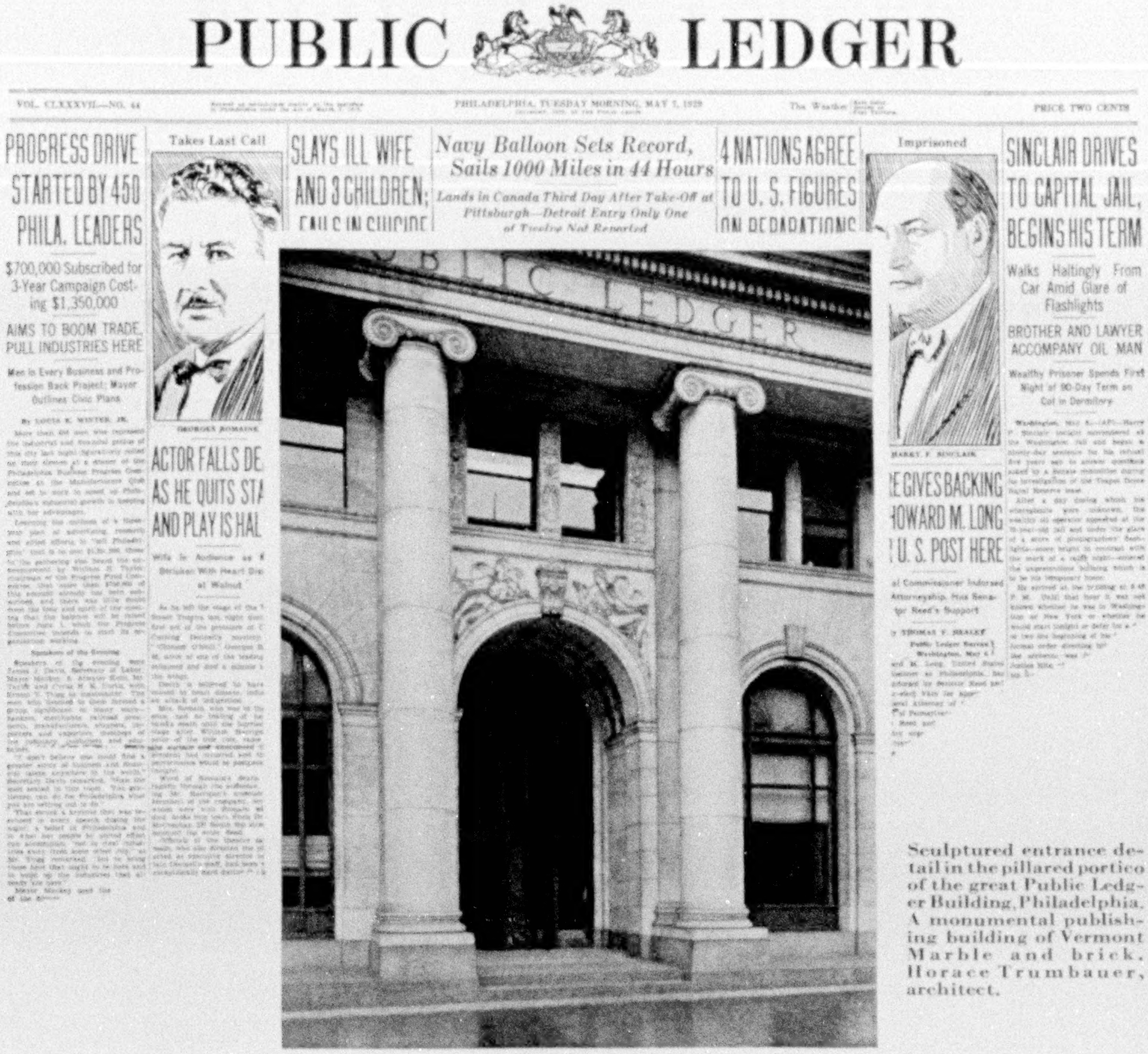

PUBLIC LEDGER

VOL. CLXXXVII.—NO. 44

PHILADELPHIA, TUESDAY MORNING, MAY 7, 1929

PRICE TWO CENTS

PROGRESS DRIVE STARTED BY 450 PHILA. LEADERS

$700,000 Subscribed for 3-Year Campaign Costing $1,350,000

AIMS TO BOOM TRADE, PULL INDUSTRIES HERE

Men In Every Business and Profession Back Project; Mayor Outlines Civic Plans

Takes Last Call

GEORGES ROMAINE

ACTOR FALLS DE
AS HE QUITS STA
AND PLAY IS HAL

SLAYS ILL WIFE AND 3 CHILDREN;

Navy Balloon Sets Record, Sails 1000 Miles in 44 Hours

Lands in Canada Third Day After Take-Off at Pittsburgh—Detroit Entry Only One

4 NATIONS AGREE TO U. S. FIGURES

Imprisoned

HARRY F. SINCLAIR

SINCLAIR DRIVES TO CAPITAL JAIL, BEGINS HIS TERM

Walks Haltingly From Car Amid Glare of Flashlights

BROTHER AND LAWYER ACCOMPANY OIL MAN

Wealthy Prisoner Spends First Night of 90-Day Term on Cot in Dormitory

E GIVES BACKING
HOWARD M. LONG
U. S. POST HERE

Sculptured entrance detail in the pillared portico of the great Public Ledger Building, Philadelphia. A monumental publishing building of Vermont Marble and brick. Horace Trumbauer, architect.

THE throb of presses is the pulse-beat of the nation. Great newspapers, like great men, *are vital* to the strength and growth of our national life. They speak to the world with the Voice of America . . . they guard the liberties we cherish . . . they serve us all!

Such men and such institutions deserve monuments of Vermont Marble. It has been America's matchless symbol of established culture and *permanent prosperity* for more than 150 years. To the master of great enterprises and to the public, it is significant of high ideals and leadership wisely put to work. It is strong, enduring and beautiful.

To enrich the beauty of your community, build with Vermont Marble. It can express in outward form the worth and permanence of your own business. It can bear with distinction the tribute you would pay for all time to your family name. It is available in every American city.

Write for booklet illustrating the 12 basic types of design used in modern family memorials. Through local Master Craftsmen in Marble, the service of our Department of Memorial Design is available everywhere.

The Memory Stone

VERMONT MARBLE COMPANY
Dept. G-4
PROCTOR, VERMONT
World's Largest Quarriers of Marble

VERMONT MARBLE

ALL THAT IS BEAUTIFUL SHALL ABIDE FOREVER

Enjoy this real coffee that lets you sleep!

IN THOUSANDS of homes, breakfast isn't breakfast without coffee. Yet when supper-time comes, the flavor and cheer of coffee is missing, and merely because of an unnecessary drug that keeps people awake.

If you are one of those who do for breakfast and don't for supper, you'll be glad to know that there's a wonderful coffee with 97% of the caffeine removed. Coffee that you will delight in for breakfast, lunch and supper.

Kellogg's★ Kaffee Hag Coffee is a blend of several of the world's best coffees. Savory, aromatic, full strength. It is so good many coffee lovers have adopted it for its superior flavor alone.

Try it and see how delightful it is. Order a can from your dealer. Steel cut or in the bean. If you've been putting up with substitutes, what could be more welcome!

Leading hotels and restaurants serve it—also diners. If you will mail the coupon, we will gladly send you a generous trial can.

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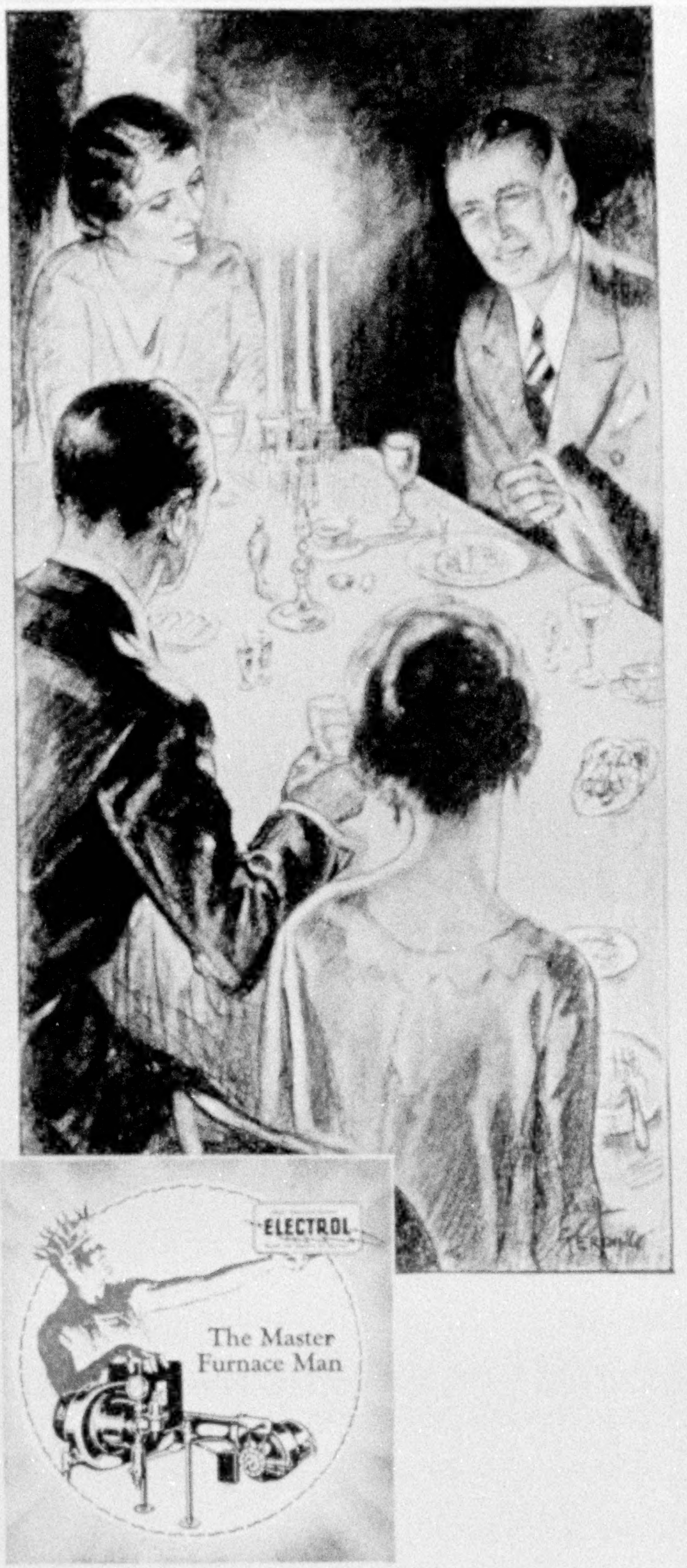

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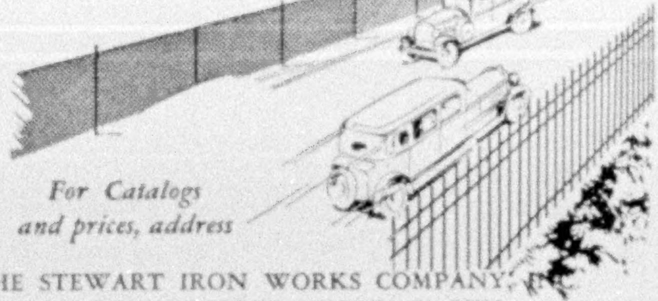

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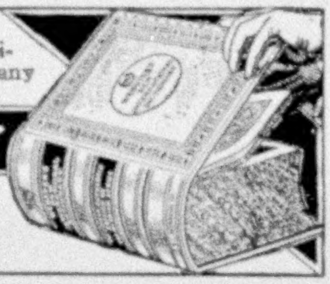

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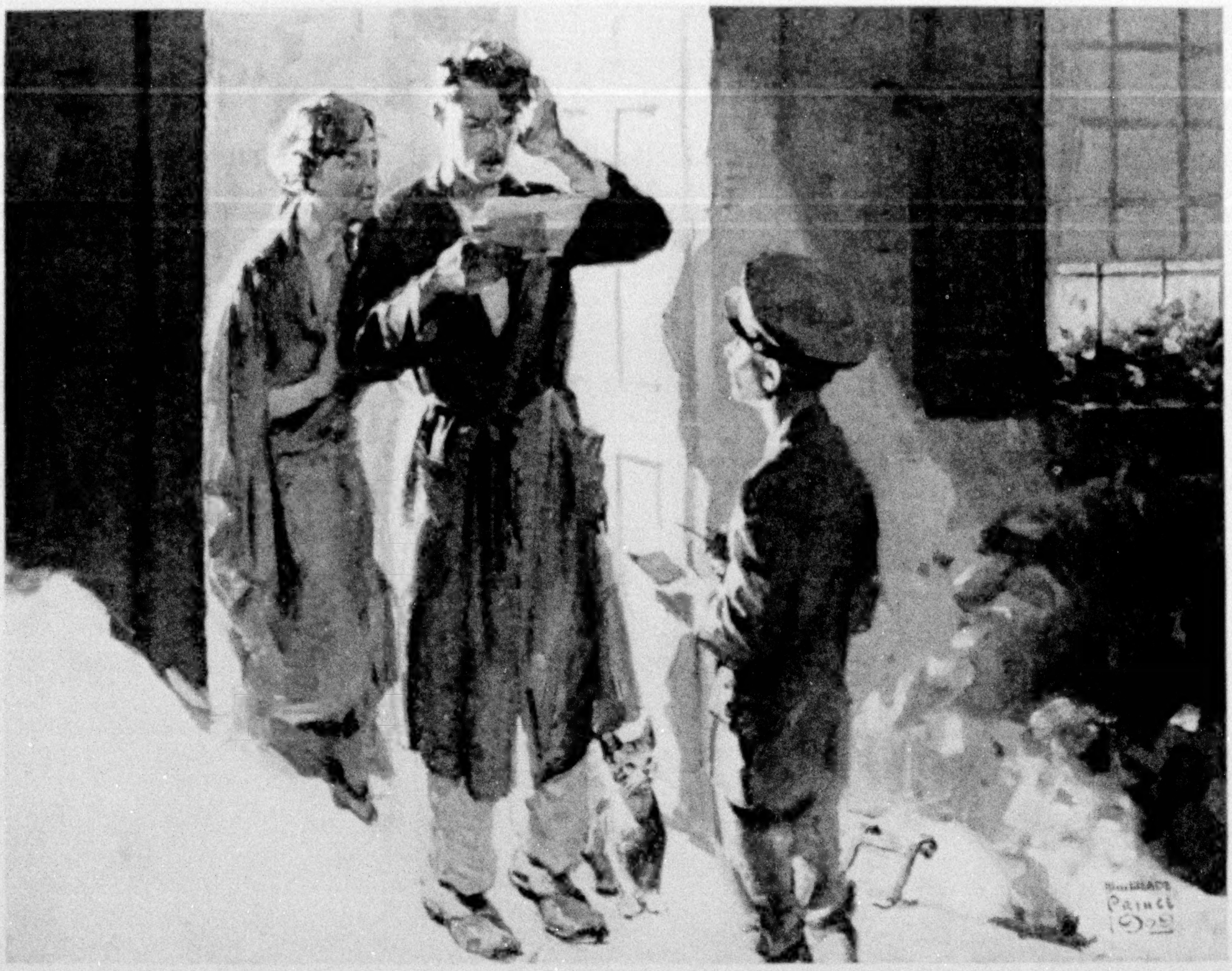

Congratulate me STOP I have scarlet fever STOP Love STOP Anne

How would you like to get word from your daughter that she had scarlet fever and was glad of it?

There are few stories in the annals of Modern Medicine more inspiring than this, of a group of young men and women who rejoiced at having contracted this dangerous malady.

And you can understand why one of them might even have sent that cheerful telegram. For it was the hearty coöperation of this group of volunteers, their willingness to risk serious disease, that helped build a great fortress of health—modern protection against scarlet fever.

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To test their theory, volunteers were called for. Young men and women came forward, willingly, eagerly. A few of the fittest were inoculated with the germs.

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He will tell you, too, that the great blessing in prevention of scarlet fever lies not only in warding off the disease itself, but in avoiding the distressing complications—swollen glands, running ears, kidney trouble—so likely to result from it.

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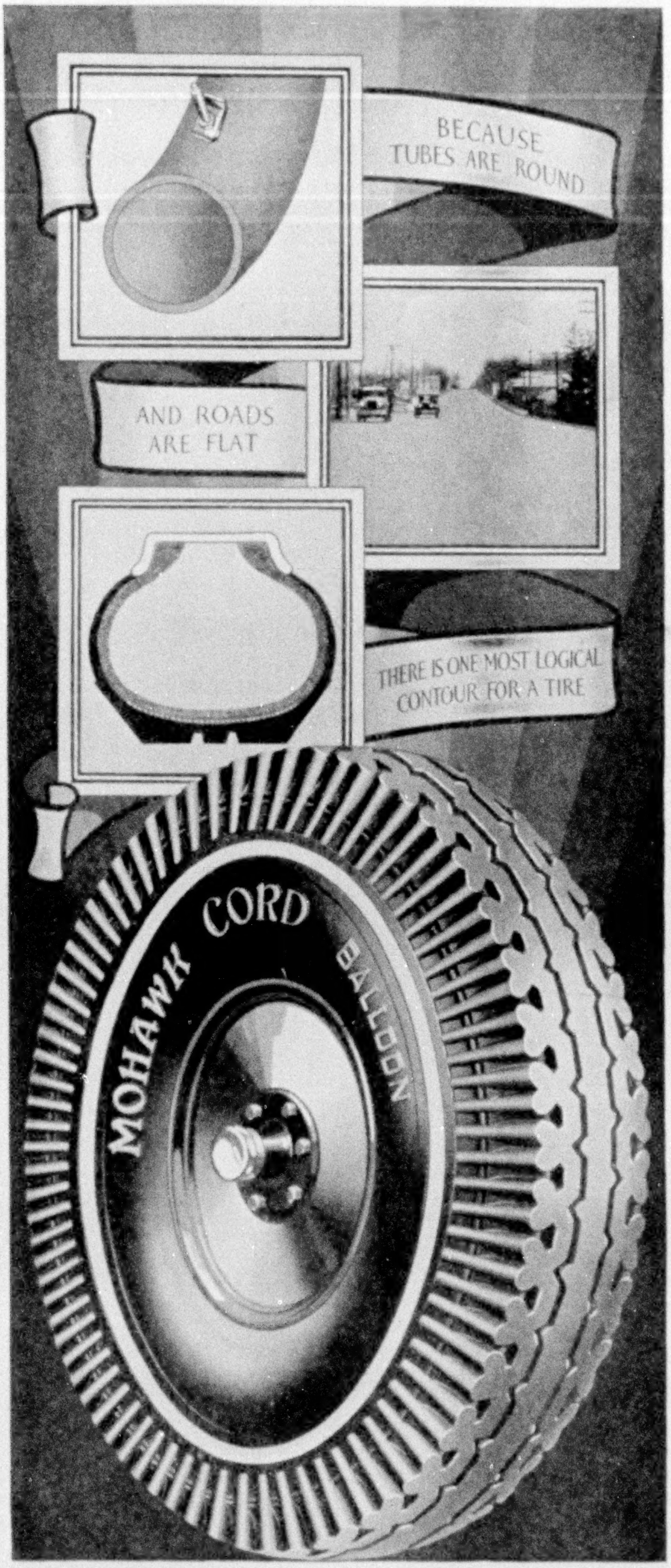

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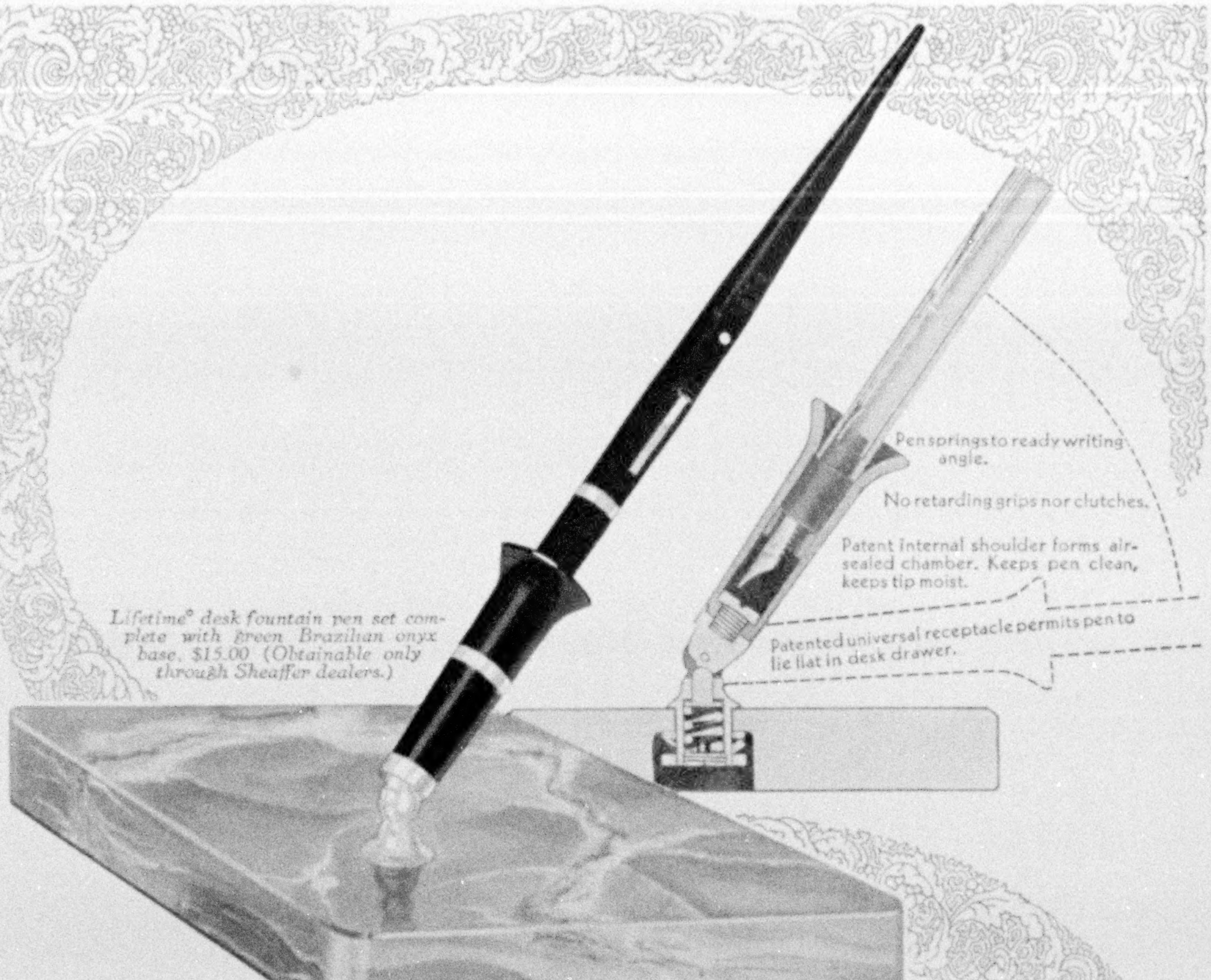
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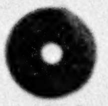
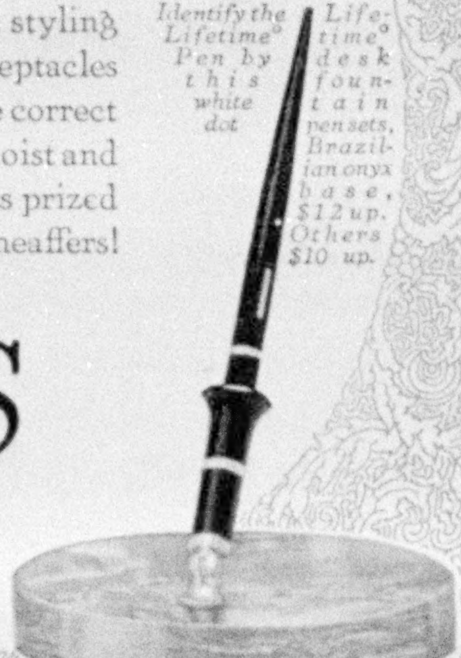


Identify the Lifetime° Pen by this white dot



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